

Agriculture

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Agriculture, the indispensable basis of civilization, was originally encountered as time, language, number and art won out. As the materialization of alienation, agriculture is the triumph of estrangement and the definite divide between culture and nature and humans from each other.

Agriculture is the birth of production, complete with its essential features and deformation of life and consciousness. The land itself becomes an instrument of production and the planet's species its objects. Wild or tame, weeds or crops speak of that duality that cripples the soul of our being, ushering in, relatively quickly, the despotism, war and impoverishment of high civilization over the great length of that earlier oneness with nature. The forced march of civilization, which Adorno recognized in the "assumption of an irrational catastrophe at the beginning of history," which Freud felt as "something imposed on a resisting majority," of which Stanley Diamond found only "conscripts, not volunteers," was dictated by agriculture. And Mircea Eliade was correct to assess its coming as having "provoked upheavals and spiritual breakdowns" whose magnitude the modern mind cannot imagine. "To level off, to standardize the human landscape, to efface its irregularities and banish its surprises," these words of E.M. Cioran apply perfectly to the logic of agriculture, the end of life as mainly sensuous activity, the embodiment and generator of separated life. Artificiality and work have steadily increased since its inception and are known as culture: in domesticating animals and plants man necessarily domesticated himself. Historical time, like agriculture, is not inherent in social reality but an imposition on it. The dimension of time or history is a function of repression, whose foundation is production or agriculture. Hunter-gatherer life was anti-time in its simultaneous and spontaneous openness; farming life generates a sense of time by its successive-task narrowness, its directed routine. As the non-closure and variety of Paleolithic living gave way to the literal enclosure of agriculture, time assumed power and came to take on the character of an enclosed space. Formalized temporal reference points — ceremonies with fixed dates, the naming of days, etc. — are crucial to the ordering of the world of production; as a schedule of production, the calendar is integral to civilization. Conversely, not only would industrial society be impossible without time schedules, the end of agriculture (basis of all production) would be the end of historical time.

Representation begins with language, a means of reining in desire. By displacing autonomous images with verbal symbols, life is reduced and brought under strict control; all direct, unmediated experience is subsumed by that supreme mode of symbolic expression, language. Language cuts up and organizes reality, as Benjamin Whorf put it, and this segmentation of nature, an as-

pect of grammar, sets the stage for agriculture. Julian Jaynes, in fact, concluded that the new linguistic mentality led very directly to agriculture. Unquestionably, the crystallization of language into writing, called forth mainly by the need for record-keeping of agricultural transactions, is the signal that civilization has begun. In the non-commodified, egalitarian hunter-gatherer ethos, the basis of which (as has so often been remarked) was sharing, number was not wanted. There was no ground for the urge to quantify, no reason to divide what was whole. Not until the domestication of animals and plants did this cultural concept fully emerge. Two of number's seminal figures testify clearly to its alliance with separateness and property: Pythagoras, center of a highly influential religious cult of number, and Euclid, father of mathematics and science, whose geometry originated to measure fields for reasons of ownership, taxation and slave labor. One of civilization's early forms, chieftainship, entails a linear rank order in which each member is assigned an exact numerical place. Soon, following the anti-natural linearity of plow culture, the inflexible 90-degree gridiron plan of even earliest cities appeared. Their insistent regularity constitutes in itself a repressive ideology. Culture, now numberized, becomes more firmly bounded and lifeless. Art, too, in its relationship to agriculture, highlights both institutions. It begins as a means to interpret and subdue reality, to rationalize nature, and conforms to the great turning point which is agriculture in its basic features. The pre-Neolithic cave paintings, for example, are vivid and bold, a dynamic exaltation of animal grace and freedom. The neolithic art of farmers and pastoralists, however, stiffens into stylized forms; Franz Borkenau typified its pottery as a "narrow, timid botching of materials and forms." With agriculture, art lost its variety and became standardized into geometric designs that tended to degenerate into dull, repetitive patterns, a perfect reflection of standardized, confined, rule-patterned life. And where there had been no representation in Paleolithic art of men killing men, an obsession with depicting confrontation between people advanced with the Neolithic period, scenes of battles becoming common. Time, language, number, art and all the rest of culture, which predates and leads to agriculture, rests on symbolization. Just as autonomy preceded domestication and self-domestication, the rational and the social precede the symbolic. Food production, it is eternally and gratefully acknowledged, "permitted the cultural potentiality of the human species to develop." But what is this tendency toward the symbolic, toward the elaboration and imposition of arbitrary forms? It is a growing capacity for objectification, by which what is living becomes reified, thing-like. Symbols are more than the basic units of culture; they are screening devices to distance us from our experiences. They classify and reduce, "to do away with," in Leakey and Lewin's remarkable phrase, "the otherwise almost intolerable burden of relating one experience to another." Thus culture is governed by the imperative of reforming and subordinating nature. The artificial environment which is agriculture accomplished this pivotal mediation, with the symbolism of objects manipulated in the construction of relations of dominance. For it is not only external nature that is subjugated: the face-to-face quality of pre-agricultural life in itself severely limited domination, while culture extends and legitimizes it.

It is likely that already during the Paleolithic era certain forms or names were attached to objects or ideas, in a symbolizing manner but in a shifting, impermanent, perhaps playful sense. The will to sameness and security found in agriculture means that the symbols became as static and constant as farming life. Regularization, rule patterning, and technological differentiation, under the sign of division of labor, interact to ground and advance symbolization. Agriculture completes the symbolic shift and the virus of alienation has overcome authentic, free life. It is the

victory of cultural control; as anthropologist Marshall Sahlins puts it, “The amount of work per capita increases with the evolution of culture and the amount of leisure per capita decreases.”

Today, the few surviving hunter-gatherers occupy the least “economically interesting” areas of the world where agriculture has not penetrated, such as the snows of the Inuit or desert of the Australian aborigines. And yet the refusal of farming drudgery, even in adverse settings, bears its own rewards. The Hazda of Tanzania, Filipino Tasaday, !Kung of Botswana, or the Kalahari Desert !Kung San—who were seen by Richard Lee as easily surviving a serious, several years’ drought while neighboring farmers starved—also testify to Hole and Flannery’s summary that “No group on earth has more leisure time than hunters and gatherers, who spend it primarily on games, conversation and relaxing.” Service rightly attributed this condition to “the very simplicity of the technology and lack of control over the environment” of such groups. And yet simple Paleolithic methods were, in their own way, “advanced.” Consider a basic cooking technique like steaming foods by heating stones in a covered pit; this is immemorially older than any pottery, kettles or baskets (in fact, is anti-container in its non-surplus, non-exchange orientation) and is the most nutritionally sound way to cook, far healthier than boiling food in water, for example. Or consider the fashioning of such stone tools as the long and exceptionally thin “laurel leaf” knives, delicately chipped but strong, which modern industrial techniques cannot duplicate. The hunting and gathering lifestyle represents the most successful and enduring adaptation ever achieved by humankind. In occasional pre-agriculture phenomena like the intensive collection of food or the systematic hunting of a single species can be seen signs of impending breakdown of a pleasurable mode that remained so static for so long precisely because it was pleasurable. The “penury and day-long grind” of agriculture, in Clark’s words, is the vehicle of culture, “rational” only in its perpetual disequilibrium and its logical progression toward ever-greater destruction, as will be outlined below.

Although the term hunter-gatherer should be reversed (and has been by not a few current anthropologists) because it is recognized that gathering constitutes by far the larger survival component, the nature of hunting provides salient contrast to domestication. The relationship of the hunter to the hunted animal, which is sovereign, free and even considered equal, is obviously qualitatively different from that of the farmer or herdsman to the enslaved chattels over which he rules absolutely. Evidence of the urge to impose order or subjugate is found in the coercive rites and uncleanness taboos of incipient religion. The eventual subduing of the world that is agriculture has at least some of its basis where ambiguous behavior is ruled out, purity and defilement defined and enforced. Lévi-Strauss defined religion as the anthropomorphism of nature; earlier spirituality was participatory with nature, not imposing cultural values or traits upon it. The sacred means that which is separated, and ritual and formalization, increasingly removed from the ongoing activities of daily life and in the control of such specialists as shamans and priests, are closely linked with hierarchy and institutionalized power. Religion emerges to ground and legitimize culture, by means of a “higher” order of reality; it is especially required, in this function of maintaining the solidarity of society, by the unnatural demands of agriculture. In the Neolithic village of Catal Hüyük in Turkish Anatolia, one of every three rooms was used for ritual purposes. Plowing and sowing can be seen as ritual renunciations, according to Burkert, a form of systematic repression accompanied by a sacrificial element. Speaking of sacrifice, which is the killing of domesticated animals (or even humans) for ritual purposes, it is pervasive in agricultural societies and found only there. Some of the major Neolithic religions often attempted a symbolic healing of the agricultural rupture with nature through the mythology of the earth

mother, which needless to say does nothing to restore the lost unity. Fertility myths are also central; the Egyptian Osiris, the Greek Persephone, Baal of the Canaanites, and the New Testament Jesus, gods whose death and resurrection testify to the perseverance of the soil, not to mention the human soul. The first temples signified the rise of cosmologies based on a model of the universe as an arena of domestication or barnyard, which in turn serves to justify the suppression of human autonomy. Whereas precivilized society was, as Redfield put it, “held together by largely undeclared but continually realized ethical conceptions,” religion developed as a way of creating citizens, placing the moral order under public management.

Domestication involved the initiation of production, vastly increased divisions of labor, and the completed foundations of social stratification. This amounted to an epochal mutation both in the character of human existence and its development, clouding the latter with ever more violence and work. Contrary to the myth of hunter-gatherers as violent and aggressive, by the way, recent evidence shows that existing non-farmers, such as the Mbuti (“pygmies”) studied by Turnbull, apparently do what killing they do without any aggressive spirit, even with a sort of regret. Warfare and the formation of every civilization or state, on the other hand, are inseparably linked.

Primal peoples did not fight over areas in which separate groups might converge in their gathering and hunting. At least “territorial” struggles are not part of the ethnographic literature and they would seem even less likely to have occurred in pre-history when resources were greater and contact with civilization non-existent. Indeed, these peoples had no conception of private property, and Rousseau’s figurative judgment, that divided society was founded by the man who first sowed a piece of ground, saying “This land is mine,” and found others to believe him, is essentially valid. “Mine and thine, the seeds of all mischief, have no place with them,” reads Pietro’s 1511 account of the natives encountered on Columbus’ second voyage. Centuries later, surviving Native Americans asked, “Sell the Earth? Why not sell the air, the clouds, the great sea?” Agriculture creates and elevates possessions; consider the longing root of belongings, as if they ever make up for the loss. Work, as a distinct category of life, likewise did not exist until agriculture. The human capacity of being shackled to crops and herds devolved rather quickly. Food production overcame the common absence or paucity of ritual and hierarchy in society and introduced civilized activities like the forced labor of temple-building. Here is the real “Cartesian split” between inner and outer reality, the separation whereby nature became merely something to be “worked.” On this capacity for a sedentary and servile existence rests the entire superstructure of civilization with its increasing weight of repression. Male violence toward women originated with agriculture, which transmuted women into beasts of burden and breeders of children. Before farming, the egalitarianism of foraging life “applied as fully to women as to men,” judged Eleanor Leacock, owing to the autonomy of tasks and the fact that decisions were made by those who carried them out. In the absence of production and with no drudge work suitable for child labor such as weeding, women were not consigned to onerous chores or the constant supply of babies. Along with the curse of perpetual work, via agriculture, in the expulsion from Eden, God told woman, “I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and that desire shall be to thy husband, and he shall rule over thee.” Similarly, the first known codified laws, those of the Sumerian king Ur-Namu, prescribed death to any woman satisfying desires outside of marriage. Thus Whyte referred to the ground women “lost relative to men when humans first abandoned a simple hunting and gathering way of life,” and Simone

de Beauvoir saw in the cultural equation of plow and phallus a fitting symbol of the oppression of women.

As wild animals are converted into sluggish meat-making machines, the concept of becoming “cultivated” is a virtue enforced on people, meaning the weeding out of freedom from one’s nature, in the service of domestication and exploitation. As Rice points out, in Sumer, the first civilization, the earliest cities had factories with their characteristic high organization and refraction of skills. Civilization from this point exacts human labor and the mass production of food, buildings, war and authority. To the Greeks, work was a curse and nothing else. Their name for it-ponos-has the same root as the Latin poena, sorrow. The famous Old Testament curse on agriculture as the expulsion from Paradise (Genesis 3:17–18) reminds us of the origin of work. As Mumford put it, “Conformity, repetition, patience were the keys to this [Neolithic] culture...the patient capacity for work.” In this monotony and passivity of tending and waiting is born, according to Paul Shepard, the peasant’s “deep, latent resentments, crude mixtures of rectitude and heaviness, and absence of humor.” One might also add a stoic insensitivity and lack of imagination inseparable from religious faith, sullenness, and suspicion among traits widely attributed to the domesticated life of farming.

Although food production by its nature includes a latent readiness for political domination and although civilizing culture was from the beginning its own propaganda machine, the changeover involved a monumental struggle. Fredy Perlman’s *Against Leviathan! Against His-Story!* is unrivaled on this, vastly enriching Toynbee’s attention to the “internal” and “external proletariats,” discontents within and without civilization. Nonetheless, along the axis from digging stick farming to plow agriculture to fully differentiated irrigation systems, an almost total genocide of gatherers and hunters was necessarily effected.

The formation and storage of surpluses are part of the domesticating will to control and make static, an aspect of the tendency to symbolize. A bulwark against the flow of nature, surplus takes the forms of herd animals and granaries. Stored grain was the earliest medium of equivalence, the oldest form of capital. Only with the appearance of wealth in the shape of storable grains do the gradations of labor and social classes proceed. While there were certainly wild grains before all this (and wild wheat, by the way, is 24 percent protein compared to 12 percent for domesticated wheat), the bias of culture makes every difference. Civilization and its cities rested as much on granaries as on symbolization. The mystery of agriculture’s origin seems even more impenetrable in light of the recent reversal of long-standing notions that the previous era was one of hostility to nature and an absence of leisure. “One could no longer assume,” wrote Arne, “that early man domesticated plants and animals to escape drudgery and starvation. If anything, the contrary appeared true, and the advent of farming saw the end of innocence.” For a long time, the question was “Why wasn’t agriculture adopted much earlier in human evolution?” More recently, we know that agriculture, in Cohen’s words, “is not easier than hunting and gathering and does not provide a higher quality, more palatable, or more secure food base.” Thus the consensus question now is, “Why was it adopted at all?”

Many theories have been advanced, none convincingly. Childe and others argue that population increase pushed human societies into more intimate contact with other species, leading to domestication and the need to produce in order to feed the additional people. But it has been shown rather conclusively that population increase did not precede agriculture but was caused by it. “I don’t see any evidence anywhere in the world,” concluded Flannery, “that suggests that population pressure was responsible for the beginning of agriculture.” Another theory has it

that major climatic changes occurred at the end of the Pleistocene, about 11,000 years ago, that upset the old hunter-gatherer life-world and led directly to the cultivation of certain surviving staples. Recent dating methods have helped demolish this approach; no such climatic shift happened that could have forced the new mode into existence. Besides, there are scores of examples of agriculture being adopted-or refused-in every type of climate. Another major hypothesis is that agriculture was introduced via a chance discovery or invention as if it had never occurred to the species before a certain moment that, for example, food grows from sprouted seeds. It seems certain that Paleolithic humanity had a virtually inexhaustible knowledge of flora and fauna for many tens of thousands of years before the cultivation of plants began, which renders this theory especially weak. Agreement with Carl Sauer's summation that, "Agriculture did not originate from a growing or chronic shortage of food" is sufficient, in fact, to dismiss virtually all originary theories that have been advanced. A remaining idea, presented by Hahn, Isaac and others, holds that food production began at base as a religious activity. This hypothesis comes closest to plausibility.

Sheep and goats, the first animals to be domesticated, are known to have been widely used in religious ceremonies, and to have been raised in enclosed meadows for sacrificial purposes. Before they were domesticated, moreover, sheep had no wool suitable for textile purposes. The main use of the hen in southeastern Asia and the eastern Mediterranean-the earliest centers of civilization-"seems to have been," according to Darby, "sacrificial or divinatory rather than alimentary." Sauer adds that the "egg laying and meat producing qualities" of tamed fowl "are relatively late consequences of their domestication." Wild cattle were fierce and dangerous; neither the docility of oxen nor the modified meat texture of such castrates could have been foreseen. Cattle were not milked until centuries after their initial captivity, and representations indicate that their first known harnessing was to wagons in religious processions. Plants, next to be controlled, exhibit similar backgrounds so far as is known. Consider the New World examples of squash and pumpkin, used originally as ceremonial rattles. Johannessen discussed the religious and mystical motives connected with the domestication of maize, Mexico's most important crop and center of its native Neolithic religion. Likewise, Anderson investigated the selection and development of distinctive types of various cultivated plants because of their magical significance. The shamans, I should add, were well-placed in positions of power to introduce agriculture via the taming and planting involved in ritual and religion, sketchily referred to above. Though the religious explanation of the origins of agriculture has been somewhat overlooked, it brings us, in my opinion, to the very doorstep of the real explanation of the birth of production: that non-rational, cultural force of alienation which spread, in the forms of time, language, number and art, to ultimately colonize material and psychic life in agriculture. "Religion" is too narrow a conceptualization of this infection and its growth. Domination is too weighty, too all-encompassing to have been solely conveyed by the pathology that is religion.

But the cultural values of control and uniformity that are part of religion are certainly part of agriculture, and from the beginning. Noting that strains of corn cross-pollinate very easily, Anderson studied the very primitive agriculturalists of Assam, the Naga tribe, and their variety of corn that exhibited no differences from plant to plant. True to culture, showing that it is complete from the beginning of production, the Naga kept their varieties so pure "only by a fanatical adherence to an ideal type." This exemplifies the marriage of culture and production in domestication, and its inevitable progeny, repression and work.

The scrupulous tending of strains of plants finds its parallel in the domesticating of animals, which also defies natural selection and re-establishes the controllable organic world at a debased, artificial level. Like plants, animals are mere things to be manipulated; a dairy cow, for instance, is seen as a kind of machine for converting grass to milk. Transmuted from a state of freedom to that of helpless parasites, these animals become completely dependent on man for survival. In domestic mammals, as a rule, the size of the brain becomes relatively smaller as specimens are produced that devote more energy to growth and less to activity. Placid, infantilized, typified perhaps by the sheep, most domesticated of herd animals; the remarkable intelligence of wild sheep is completely lost in their tamed counterparts. The social relationships among domestic animals are reduced to the crudest essentials. Non-reproductive parts of the life cycle are minimized, courtship is curtailed, and the animal's very capacity to recognize its own species is impaired. Farming also created the potential for rapid environmental destruction and the domination over nature soon began to turn the green mantle that covered the birthplaces of civilization into barren and lifeless areas. "Vast regions have changed their aspect completely," estimates Zeuner, "always to quasi-drier condition, since the beginnings of the Neolithic." Deserts now occupy most of the areas where the high civilizations once flourished, and there is much historical evidence that these early formations inevitably ruined their environments.

Throughout the Mediterranean Basin and in the adjoining Near East and Asia, agriculture turned lush and hospitable lands into depleted, dry, and rocky terrain. In *Critias*, Plato described Attica as "a skeleton wasted by disease," referring to the deforestation of Greece and contrasting it to its earlier richness. Grazing by goats and sheep, the first domesticated ruminants, was a major factor in the denuding of Greece, Lebanon, and North Africa, and the desertification of the Roman and Mesopotamian empires. Another, more immediate impact of agriculture, brought to light increasingly in recent years, involved the physical well-being of its subjects. Lee and Devore's researches show that "the diet of gathering peoples was far better than that of cultivators, that starvation is rare, that their health status was generally superior, and that there is a lower incidence of chronic disease." Conversely, Farb summarized, "Production provides an inferior diet based on a limited number of foods, is much less reliable because of blights and the vagaries of weather, and is much more costly in terms of human labor expended."

The new field of paleopathology has reached even more emphatic conclusions, stressing, as does Angel, the "sharp decline in growth and nutrition caused by the changeover from food gathering to food production." Earlier conclusions about life span have also been revised. Although eyewitness Spanish accounts of the sixteenth century tell of Florida Indian fathers seeing their fifth generation before passing away, it was long believed that primitive people died in their 30s and 40s. Robson, Boyden and others have dispelled the confusion of longevity with life expectancy and discovered that current hunter-gatherers, barring injury and severe infection, often outlive their civilized contemporaries. During the industrial age only fairly recently did life span lengthen for the species, and it is now widely recognized that in Paleolithic times humans were long-lived animals, once certain risks were passed. DeVries is correct in his judgment that duration of life dropped sharply upon contact with civilization. "Tuberculosis and diarrheal disease had to await the rise of farming, measles and bubonic plague the appearance of large cities," wrote Jared Diamond. Malaria, probably the single greatest killer of humanity, and nearly all other infectious diseases are the heritage of agriculture. Nutritional and degenerative diseases in general appear with the reign of domestication and culture. Cancer, coronary thrombosis, anemia, dental caries, and mental disorders are but a few of the hallmarks of agriculture; previously women

gave birth with no difficulty and little or no pain. People were far more alive in all their senses. !Kung San, reported R.H. Post, have heard a single-engine plane while it was still 70 miles away, and many of them can see four moons of Jupiter with the naked eye. The summary judgment of Harris and Ross, as to “an overall decline in the quality-and probably in the length-of human life among farmers as compared with earlier hunter-gatherer groups,” is understated.

One of the most persistent and universal ideas is that there was once a Golden Age of innocence before history began. Hesiod, for instance, referred to the “life-sustaining soil, which yielded its copious fruits unbribed by toil.” Eden was clearly the home of the hunter-gatherers and the yearning expressed by the historical images of paradise must have been that of disillusioned tillers of the soil for a lost life of freedom and relative ease.

The history of civilization shows the increasing displacement of nature from human experience, characterized in part by a narrowing of food choices. According to Rooney, prehistoric peoples found sustenance in over 1500 species of wild plants, whereas “All civilizations,” Wenke reminds us, “have been based on the cultivation of one or more of just six plant species: wheat, barley, millet, rice, maize, and potatoes.” It is a striking truth that over the centuries “the number of different edible foods which are actually eaten,” Pyke points out, “has steadily dwindled.” The world’s population now depends for most of its subsistence on only about 20 genera of plants while their natural strains are replaced by artificial hybrids and the genetic pool of these plants becomes far less varied.

The diversity of food tends to disappear or flatten out as the proportion of manufactured foods increases. Today the very same articles of diet are distributed worldwide, so that an Inuit Eskimo and an African may soon be eating powdered milk manufactured in Wisconsin or frozen fish sticks from a single factory in Sweden. A few big multinationals such as Unilever, the world’s biggest food production company, preside over a highly integrated service system in which the object is not to nourish or even to feed, but to force an ever-increasing consumption of fabricated, processed products upon the world.

When Descartes enunciated the principle that the fullest exploitation of matter to any use is the whole duty of man, our separation from nature was virtually complete and the stage was set for the Industrial Revolution. Three hundred and fifty years later this spirit lingered in the person of Jean Vorst, Curator of France’s Museum of Natural History, who pronounced that our species, “because of intellect,” can no longer re-cross a certain threshold of civilization and once again become part of a natural habitat. He further stated, expressing perfectly the original and persevering imperialism of agriculture, “As the earth in its primitive state is not adapted to our expansion, man must shackle it to fulfill human destiny.” The early factories literally mimicked the agricultural model, indicating again that at base all mass production is farming. The natural world is to be broken and forced to work. One thinks of the mid-American prairies where settlers had to yoke six oxen to plows in order to cut through the soil for the first time. Or a scene from the 1870s in *The Octopus* by Frank Norris, in which gang-plows were driven like “a great column of field artillery” across the San Joaquin Valley, cutting 175 furrows at once. Today the organic, what is left of it, is fully mechanized under the aegis of a few petrochemical corporations. Their artificial fertilizers, pesticides, herbicides and near-monopoly of the world’s seed stock define a total environment that integrates food production from planting to consumption. Although Lévi-Strauss is right that “Civilization manufactures monoculture like sugar beets,” only since World War II has a completely synthetic orientation begun to dominate.

Agriculture takes more organic matter out of the soil than it puts back, and soil erosion is basic to the monoculture of annuals. Regarding the latter, some are promoted with devastating results to the land; along with cotton and soybeans, corn, which in its present domesticated state is totally dependent on agriculture for its existence, is especially bad. J. Russell Smith called it “the killer of continents...and one of the worst enemies of the human future.” The erosion cost of one bushel of Iowa corn is two bushels of topsoil, highlighting the more general large-scale industrial destruction of farmland. The continuous tillage of huge monocultures, with massive use of chemicals and no application of manure or humus, obviously raises soil deterioration and soil loss to much higher levels. The dominant agricultural mode has it that soil needs massive infusions of chemicals, supervised by technicians whose overriding goal is to maximize production. Artificial fertilizers and all the rest from this outlook eliminate the need for the complex life of the soil and indeed convert it into a mere instrument of production. The promise of technology is total control, a completely contrived environment that simply supersedes the natural balance of the biosphere.

But more and more energy is expended to purchase great monocultural yields that are beginning to decline, never mind the toxic contamination of the soil, ground water and food. The U.S. Department of Agriculture says that cropland erosion is occurring in this country at a rate of two billion tons of soil a year. The National Academy of Sciences estimates that over one third of topsoil is already gone forever. The ecological imbalance caused by monocropping and synthetic fertilizers causes enormous increases in pests and crop diseases; since World War II, crop loss due to insects has actually doubled. Technology responds, of course, with spiraling applications of more synthetic fertilizers, and “weed” and “pest” killers, accelerating the crime against nature.

Another post-war phenomenon was the Green Revolution, billed as the salvation of the impoverished Third World by American capital and technology. But rather than feeding the hungry, the Green Revolution drove millions of poor people from farmlands in Asia, Latin America and Africa as victims of the program that fosters large corporate farms. It amounted to an enormous technological colonization creating dependency on capital-intensive agribusiness, destroying older agrarian communalism, requiring massive fossil fuel consumption and assaulting nature on an unprecedented scale. Desertification, or loss of soil due to agriculture, has been steadily increasing. Each year, a total area equivalent to more than two Belgiums is being converted to desert worldwide. The fate of the world’s tropical rainforests is a factor in the acceleration of this desiccation: half of them have been erased in the past thirty years. In Botswana, the last wilderness region of Africa has disappeared like much of the Amazon jungle and almost half of the rainforests of Central America, primarily to raise cattle for the hamburger markets in the U.S. and Europe. The few areas safe from deforestation are where agriculture doesn’t want to go. The destruction of the land is proceeding in the U.S. over a greater land area than was encompassed by the original thirteen colonies, just as it was at the heart of the severe African famine of the mid-1980s, and the extinction of one species of wild animal and plant after another.

Returning to animals, one is reminded of the words of Genesis in which God said to Noah, “And the fear of you and the dread of you shall be upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea; into your hands are they delivered.” When newly discovered territory was first visited by the advance guard of production, as a wide descriptive literature shows, the wild mammals and birds showed no fear whatsoever of the explorers. The agriculturalized mentality, however, so aptly foretold in the biblical passage, projects an exag-

gerated belief in the fierceness of wild creatures, which follows from progressive estrangement and loss of contact with the animal world, plus the need to maintain dominance over it.

The fate of domestic animals is defined by the fact that agricultural technologists continually look to factories as models of how to refine their own production systems. Nature is banished from these systems as, increasingly, farm animals are kept largely immobile throughout their deformed lives, maintained in high-density, wholly artificial environments. Billions of chickens, pigs, and veal calves, for example, no longer even see the light of day much less roam the fields, fields growing more silent as more and more pastures are plowed up to grow feed for these hideously confined beings.

The high-tech chickens, whose beak ends have been clipped off to reduce death from stress-induced fighting, often exist four or even five to a 12" by 18" cage and are periodically deprived of food and water for up to ten days to regulate their egg-laying cycles. Pigs live on concrete floors with no bedding; foot-rot, tail-biting and cannibalism are endemic because of physical conditions and stress. Sows nurse their piglets separated by metal grates, mother and offspring barred from natural contact. Veal calves are often raised in darkness, chained to stalls so narrow as to disallow turning around or other normal posture adjustment. These animals are generally under regimens of constant medication due to the tortures involved and their heightened susceptibility to diseases; automated animal production relies upon hormones and antibiotics. Such systematic cruelty, not to mention the kind of food that results, brings to mind the fact that captivity itself and every form of enslavement has agriculture as its progenitor or model. Food has been one of our most direct contacts with the natural environment, but we are rendered increasingly dependent on a technological production system in which finally even our senses have become redundant; taste, once vital for judging a food's value or safety, is no longer experienced, but rather certified by a label. Overall, the healthfulness of what we consume declines and land once cultivated for food now produces coffee, tobacco, grains for alcohol, marijuana, and other drugs, creating the context for famine. Even the non-processed foods like fruits and vegetables are now grown to be tasteless and uniform because the demands of handling, transport and storage, not nutrition or pleasure, are the highest considerations. Total war borrowed from agriculture to defoliate millions of acres in Southeast Asia during the Vietnam War, but the plundering of the biosphere proceeds even more lethally in its daily, global forms. Food as a function of production has also failed miserably on the most obvious level: half of the world, as everyone knows, suffers from malnourishment ranging to starvation itself.

Meanwhile, the "diseases of civilization," as discussed by Eaton and Konner in the January 31, 1985 New England Journal of Medicine and contrasted with the healthful pre-farming diets, underline the joyless, sickly world of chronic maladjustment we inhabit as prey of the manufacturers of medicine, cosmetics, and fabricated food. Domestication reaches new heights of the pathological in genetic food engineering, with new types of animals in the offing as well as contrived microorganisms and plants. Logically, humanity itself will also become a domesticated of this order as the world of production processes us as much as it degrades and deforms every other natural system.

The project of subduing nature, begun and carried through by agriculture, has assumed gigantic proportions. The "success" of civilization's progress, a success earlier humanity never wanted, tastes more and more like ashes. James Serpell summed it up this way: "In short we appear to have reached the end of the line. We cannot expand; we seem unable to intensify production without wreaking further havoc, and the planet is fast becoming a wasteland." Physiologist Jared

Diamond termed the initiation of agriculture “a catastrophe from which we have never recovered.” Agriculture has been and remains a “catastrophe” at all levels, the one which underpins the entire material and spiritual culture of alienation now destroying us. Liberation is impossible without its dissolution.

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Animal Dreams

John Zerzan

May 1st, 2014

This is the age of disembodiment, when our sense of separateness from the earth grows and we are meant to forget our animality. But we are animals and we co-evolved, like all animals, in rapport with other bodily forms and aspects of the world. Minds as well as senses arise from embodiment, just as other animals conveyed meaning—until modernity, that is. We are the top of the food chain, which makes us the only animal nobody needs. Hamlet was very much off the mark in calling humans “the beauty of the world, the paragon of animals.” Mark Twain was much closer: “the only animal that blushes. Or needs to.”¹ The life form that is arguably least well adapted to reality, that has weaker chances for survival among the at least 10 million animal (mostly insect) species. Humans are among the very few mammals who will kill their own kind without the provocation of extreme hunger.²

The human species is unique but so is every other species. We differ from the rest no more, it seems, than do other species from each other. Non-human animals have routinely amazing facilities for accomplishing things by acting on information they receive from their environments. They are creatures of instinct, but so are we. As Joseph Wood Krutch asked, “who is the more thoroughly acquainted with the world in which he lives?”³ Adaptation to one’s world is a cognitive process. If we wonder which species is the smartest, the best answer is, most likely: they all are.

I think that Henry Beston is beautifully helpful: “We patronize them for their incompleteness, for their tragic fate of having taken form so far below ourselves. And therein we err, and greatly err. For the animal shall not be measured by man. In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear.”⁴

In the 1980s I knew someone who signed his excellent anti-authoritarian writings and flyers “70 animals.” That kind of identification has charmed me ever since. In rather a contrary spirit is the long-prevailing ban on that act of appropriation and greatest sin, anthropomorphism. Correcting this desperate error means that “A monkey cannot be angry: it exhibits aggression. A crane

¹ Quoted in Marc D. Hauser, *Wild Minds* (New York: Henry Holt and Company, 2000), p. 70.

² Konrad Lorenz, *The Waning of Humaneness* (Boston: Little, Brown and Company, 1987), p. 70.

³ Aldo Leopold, *A Sand County Almanac* (New York: Ballantine Books, 1976), p. 83.

⁴ Henry Beston, *The Outermost House* (New York: St. Martin’s Griffin, 2003), p. 25.

does not feel affection; it displays courtship or parental behavior. A cheetah is not frightened by a lion; it shows flight behavior.”⁵

Why not take this kind of reductive approach even further and simply remove animals from our vocabulary? This is already underway, if the Oxford Junior Dictionary is any indication. The 2009 edition added several techno words like Twitter and mp3, while the names of various animals, trees, etc. had been deleted.⁶ Children (and others) have less and less contact with nature, after all.

But there is no substitute for direct contact with the living world, if we are to know what it is to be living. Our own world shrinks and shrivels, cut off from animal culture, from the zones of that shared, learned behavior. What Jacob Uexhull called the *Umwelt*, the universe known to each species. We need to be open to the community of our beginnings and to the present non-human life-world.

Amphibians have been here for 300 million years; birds for 150 million years. Dragonflies ask no more of the biosphere than they did 100 million years ago, while *Homo* species, around for not much more than three million years, are the only animals that are—since domestication and civilization—never satisfied, always pursuing new wants.⁷

Might it not be that nature is for the happiness of all species, not just one? We sense something like this as we search for oases of wildness in the vacuum of civilization. “‘Hope’ is the thing with feathers,” wrote Emily Dickinson.⁸

We have mainly lost the sense of the presence or aura of animals, of those who inhabit their bodies so wholly, fully. People in traditional indigenous cultures have not lost that awareness. They feel their kinship with all who live. Some of the bond remains even with us, however, and may be seen in small ways—our instinctive love of songbirds, for example.

All is not sweetness and light in the non-human realm either, especially in this shaken and disturbed world. Rape has been observed among orangutans, dolphins, seals, bighorn sheep, wild horses, and some birds, although it is not the norm in any of these species.⁹ But even in animal societies marked by male power, females generally remain self-sufficient and responsible for their own sustenance, unlike in most human (domesticated) societies. In some groupings, in fact, females provide for all. Lionesses do the hunting in their prides, for example.¹⁰ Each elk herd is led by a cow, wise in the ways of coyote, wolf, lynx, cougar, and human. And it is also the case, according to many, that non-humans can be as individually distinct as we are. Delia Akeley concluded that “apes and monkeys vary in their dispositions as much as do human beings,”¹¹ and Barry Lopez commented on the “markedly different individual personalities” of wolves.¹²

⁵ Jeffrey Moussaieff Masson and Susan McCarthy, *When Elephants Weep* (New York: Delacorte Press, 1995), p. 34. Among other works that indicate a shift away from anti-“anthropomorphism” are Ruth Rudner, *ask now the beasts* (New York: Marlowe & Company, 2006) and *How Forests Think* (Berkeley: University of California Press, 2013).

⁶ Eoin O’Carroll, “Oxford Junior Dictionary Dropping ‘Nature’ Words,” *Christian Science Monitor*, February 9, 2009.

⁷ An ugly leftist counter-notion is communist Oxana Timofeeva, *History of Animals: An Essay on Negativity, Immanence and Freedom* (Maastricht: Jan van Eyck Academie, 2012), with Foreward by Slavoj Žižek. Timofeeva condemns nature’s resistance to technology while bizarrely claiming that animals are natural communists! E.g. pp. 146- 147.

⁸ Quoted in Susan Hanson, *Icons of Loss and Grace* (Lubbock: Texas Tech University Press, 2004), p. 182.

⁹ Masson and McCarthy, *op.cit.*, p. 140.

¹⁰ Barbara Noske, *Humans and Other Animals* (London: Pluto Press, 1989), p. 115.

¹¹ Vera Norwood, *Made from this Earth* (Chapel Hill: The University of North Carolina Press, 1993), p. 235.

¹² Barry Lopez, *Of Wolves and Men* (New York: Scribner Classics, 2004), p. 18.

But one does see an absence of many old, infirm, and diseased animals among non-domesticates. How the “food chain” operates here brings up questions such as, do wolves only kill animals that are near their end anyway—the old, sick, injured? This seems to be roughly the case, according to Lopez.¹³

Hierarchy and dominance among other species is a long-running assumption, often a baseless one. The idea that there is usually, if not always, a “pecking order” derives from a Norwegian graduate student in 1922. His concept came from observing domestic chickens in his back yard and spread virulently in the animal studies field. It is a classic example of projecting from human domestication where, of course, hierarchy and dominance are indeed the rule. Its universality unravels with the fact that poultry yard pecking orders are not observed in wild flocks.

Similar is the fallacy that the Freudian paradigm of murderous rivalry between fathers and sons represents the state of nature. Questionable in the first application; even more so, evidently, regarding non-humans. Masson and McCarthy refer to zebra, kiwi, beaver, wolf, and mongoose fathers exhibiting acceptance and affection toward their offspring.¹⁴ South American muriqui monkeys, female and male, are non-aggressive, tolerant and co-operative. Steve Kemper’s “No Alpha Males Allowed” focuses on Karen Strier’s work with the muriqui, which subverts the dominant view of male primates.¹⁵ Among Asian gibbons, primates that live in pairs, the male may stay with his mate a very long time after sexual activity has ceased.¹⁶

John Muir described a goose attacking a hunter in support of a wounded companion: “Never before had I regarded wild geese as dangerous, or capable of such noble self-sacrificing devotion.”¹⁷ Geese mate monogamously and for life.

Widespread among non-humans are the social traits of parental care, co-operative foraging, and reciprocal kindness or mutual aid. Mary Midgley, in sum, referred to “their natural disposition to love and trust one another.”¹⁸ Also, to love and trust others, such as humans, to the point of raising them. Jacques Graven, in a striking finding, refers to children having been adopted by wolves, bears, gazelles, pigs, and sheep.¹⁹

In his irresistible *Desert Solitaire*, the cantankerous Edward Abbey imagines that the frogs he hears singing do so for various practical purposes, “but also out of spontaneous love and joy.”²⁰ N.J. Berrill declared: “To be a bird is to be alive more intensely than any other living creature, man included...they live in a world that is always the present, and mostly full of joy.”²¹ To Joseph Wood Krutch it seemed that we have seen our capacity for joy atrophy. For animals, he decided, “joy seems to be more important and more accessible than it is to us.”²²

Various non-human intelligences seem lately to be much more highly regarded than in the past. John Hoptas and Kristine Samuelson’s *Tokyo Waka*, a 2013 documentary film, looks at resourceful urban crows. How they use their beaks to shape twigs into hooks to snag grubs from trees, for example. In 2002, a New Caledonia crow named Betty was declared by an Oxford University

¹³ Ibid., p. 55.

¹⁴ Masson and McCarthy, op.cit., p. 72.

¹⁵ Steve Kemp, “No Alpha Males Allowed,” *Smithsonian*, September 2013, pp. 39–41.

¹⁶ Noske, op. cit., p. 116.

¹⁷ John Muir, *The Story of My Boyhood and Youth* (Boston: Houghton Mifflin Company, 1912), p. 151.

¹⁸ Mary Midgley, *The Ethical Primate* (New York: Routledge, 1994), p. 131.

¹⁹ Jacques Graven, *Non-Human Thought* (New York: Stein and Day, 1967), p. 68.

²⁰ Edward Abbey, *Desert Solitaire: A Season in the Wilderness* (New York: Ballantine Books, 1971), p. 157.

²¹ Quoted in Joseph Wood Krutch, *The Great Chain of Life* (Boston: Houghton Mifflin Company, 1956), p. 224.

²² Ibid., p. 227.

researcher to have been the first animal to create a tool for a specific task without trial and error, something primates have evidently yet to achieve. Elephants' actions, according to J.H. Williams, are "always revealing an intelligence which finds impromptu solutions for difficulties."²³

More surprising is what is coming to light about animals we usually consider to be further down the "food chain." Katherine Harmon Courage has uncovered heretofore unseen capacities of the octopus. "It can solve mazes, open jars, use tools. It even has what seems to be a sophisticated inner life." Courage goes on to state that the octopus "has a brain unlike that of almost any creature we might think of as intelligent."²⁴ Along these lines is a growing interest in "cold-blooded cognition," with recent studies revealing that reptile brains are not as undeveloped as we imagined. Lizards and tortoises, for instance, have exhibited impressive problem-solving capabilities.²⁵

Jacques Graven was amazed to learn that the method of solving a maze is "scarcely different for a roach than for a rat," and that striking achievements by mammals "reappear in almost identical form in insects."²⁶ Speaking of mazes and the like, it may be added that very little of important truth is to be found in controlled laboratory experiments, whichever species may be subjected to them.

Memory is important to many creatures as an aid to survival. The work of animal scientist Tetsuro Matsuzawa demonstrates that chimpanzees have far stronger memories than humans.²⁷ Katydids have a hearing range many times that of ours. Honeybees can see ultraviolet light, invisible to us. The ichneumon fly can smell through solid wood. A monarch butterfly's sense of taste is two hundred times as sensitive as the human tongue. The dung beetle finds its way with reference to the Milky Way. Animals with four legs, and who don't wear shoes, probably pick up on a variety of emanations or vibrations lost on us. How about pet dogs or cats who are separated by hundreds of miles from their host families, and somehow find them? Only a kind of telepathy could account for the very many such cases.

A great deal more could be said about the gifts of animals. Or about their play. It is not "anthropomorphic" to recognize that animals play. Consider the mating dances of birds. I have seen the wonderful dawn dances of the sandhill crane. They dance, and have inspired an endless list of human societies. What of wild geese, whose matchless grace, elegance and devotion put us humans to shame?

Individuals of many species operate on an awareness that there is a distinction between "self" and "non-self." A member of one species can always recognize another of the same species. These kinds of self-recognition are obvious. Another instance is that of grizzly bears hiding out of sight of humans and others. There is a consciousness that the whole body—the "self" if you will—must be concealed.

But do non-humans realize that they are "selves"? Do they have self-awareness such that they realize their mortality? Many posit an absence of self-reflection and make this supposed absence the primary dividing line between humans and all other animals. Bees use signs, but are not conscious of their signing. On what basis, however, can we make assumptions about what bees or other animals know or do not know? Chimpanzees and orangutans recognize themselves in

²³ J.H. Williams, *Elephant Bill* (London: Rupert Hart-Davis, 1950), p. 58.

²⁴ Katherine Harmon Courage, "Alien Intelligence," *Wired*, October 2013, p. 84.

²⁵ Emily Anthes, "Coldblooded Does Not Mean Stupid," *New York Times*, November 19, 2013, pp D1, D5.

²⁶ Graven, *op.cit.*, p. 127. 7

²⁷ Justin McCurry, "Chimps Are Making Monkeys Out of Us," *The Observer*, September 28, 2013.

a mirror; gorillas cannot. What exactly does this reveal? There is quite a set of unresolved questions, in fact, as to how conscious or unconscious human behavior is, especially in light of the fact that consciousness in ourselves is such a completely elusive thing. The complex, versatile, and adaptive responses we see as a rule among the living on this planet may or may not be guided by self-awareness. But self-awareness is not likely an all-or-nothing phenomenon. The differences between humans and others have not been established as radical; they are probably more a matter of degree. More fundamentally, we do not know how to even comprehend consciousnesses different from our own.

Our concept of self-awareness, vague though it is, seems to be the gold standard for evaluating non-humans. The other watershed condition is that of language: are we the only species that possess it? And these two benchmarks are commonly run together, in the assumption that consciousness can only be expressed by means of language. It is tempting to see in language the explanation for consciousness, to wonder whether the latter is only applicable to language-using beings. Indeed it can seem very difficult to think about the state of our minds without recourse to language. But if language were the only basis of a thinking order, all non-human animals would live in a completely disordered world, after all.

Wolves, dogs, dolphins, elephants, whales, to name a few, can vocalize at about the range of human registry. Humpback whale “songs” are complex intra-species forms of cultural expression across vast distances. It may be that animals’ calls are, overall, more a matter of doing than of meaning.

If we look for our kind of symbolic meaning, it does not seem to be sustained among our fellow animals. In their natural state, parrots never imitate the human voice; species that may be seen to draw in captivity do not do so in the wild. Primates trained to master language do not use it like humans. Herbert Terrace, once a convinced ape-language researcher, became one of its harshest critics. Trying to wrest “a few tidbits of language from a chimpanzee [who is] trying to get rewards,” says Terrace, produces nothing much of importance.²⁸

Animals don’t do what humans do via speech, namely, make a symbol stand in for the thing.²⁹ As Tim Ingold puts it, “they do not impose a conceptual grid on the flow of experience and hence do not encode that experience in symbolic forms.”³⁰ An amazing richness of signaling, of the most varied kinds, does not equate to symbolizing. When a creature presents its intentional acts, it does so without the need to describe them, to re-present them.

The poet Richard Grossman found that truth is “the way it tells itself.”³¹ Jacques Lacan saw the orientation toward representation as a lack; the animal is without the lack that constitutes the human subject. At the heart of nature, wrote Joseph Wood Krutch, are the values “as yet uncaptured by language;” he added that the quality of cranes lies “beyond the need of words.”³²

I’ve long wondered how it is that so many animals look you in the eye. What do they mean by it? Gavin Maxwell enjoyed the “wondering inquisitiveness” of the eyes of Canadian porpoises,³³ while Diane Fossey’s *Gorillas in the Mist* is filled with examples of gorillas and humans gazing on

²⁸ Quoted in Stephen Budiansky, *If a Lion Could Talk* (New York: Free Press, 1998), p. 45.

²⁹ Kelly Oliver, *Animal Lessons: How They Teach Us to be Human* (New York: Columbia University Press, 2008), p. 186.

³⁰ Tim Ingold, *Evolution and Social Life* (New York: Cambridge University Press, 1986), p. 311.

³¹ Richard Grossman, “The Truth,” in *Animals* (Minneapolis: Zygote Press, 1983), p. 421.

³² Leopold, *op.cit.*, p. 102.

³³ Gavin Maxwell, *Ring of Bright Water* (Boston: Nonpareil Books, 2011), p. 45

one another in trust. John Muir wrote of Stickeen, an Alaskan dog with whom Muir survived a life-threatening situation, “His strength of character lay in his eyes. They looked as old as the hills, and as young, and as wild.”³⁴ John Lane was drawn by the eyes of alligators, an experience “not to be forgotten. Their black eyes hold steady as if staring through millions of miles or years.”³⁵

Maybe there’s more to be learned there, in those direct windows, in that openness and immediacy, than by means of quite possibly unanswerable questions about consciousness and language. And if we could somehow see with those eyes, would it possibly allow us to really see ourselves?

There is an unmediated openness about the eyes. Death may be mentioned here, as perhaps the least mediated experience, or certainly among them. Loren Eiseley, near his own end, felt that wild things die “without question, without knowledge of mercy in the universe, knowing only themselves and their own pathway to the end.”³⁶ Ernest Seton-Thompson’s *Biography of a Grizzly* (1901) contains much about death. Today we are ever more distanced from encountering the reality of death—and animals. As our lives shrink, Thoreau’s words from 1859 are all the more true: “It seems as if no man had ever died in America; for in order to die you must first have lived.”³⁷ One need only add, it isn’t humans who know how to die, but the animals.

As if in acknowledgment, humans have exacted a revenge on selected species. Domestication is a kind of death, forcing animal vitality into a subjugated state. When animals are colonized and appropriated, both domesticated and domesticators are qualitatively reduced. It is the proverbial “greatest mistake in human history” for all concerned. The direct victims, once quite able to take care of themselves, lose autonomy, freedom of movement, brain size, and what Krutch called the “heroic virtues.”³⁸

A farm pig is almost as much a human artifact as the farmer’s tractor. Compare to a wild boar. Wild means free. To John Muir, wild sheep represented conditions before the Fall; conversely, he decided, “If a domestic sheep was any indication, Man’s work had been degrading for himself and his charges.”³⁹ The level of an animal’s perfection, as Nietzsche saw it, was their “degree of wildness and their power to evade domestication.”⁴⁰ In light of the vast picture of oppression, David Nibert calls the institution “domesecration,” and it is not surprising that objections have been raised against even using the same name for wild and domestic members of a species.

Industrialism of course brought far worse lives on a mass scale, mass misery to feed mass society. Zoos and marine parks showcase further slavery, a fitting complement to the captivity at large. As the unbuilt, unmassified world recedes, the line between undomesticated and domesticated has blurred. Pretty much everything requires managing, up to and including the oxymoron “wildlife management.” We are now in fact in a new age of domestication, including an unprecedented escalation of controlled animal breeding in recent decades.⁴¹

³⁴ Edwin Way Teale, *The Wilderness World of John Muir* (Boston: Houghton Mifflin Company, 1954), p. 281.

³⁵ John Lane, *Waist Deep in Black Water* (Athens: University of Georgia Press, 2002), p. 49.

³⁶ Loren Eiseley, *The Night Country* (Lincoln: University of Nebraska Press, 1997), p. 173.

³⁷ Henry David Thoreau, *The Journal, 1837–1861*, ed. Damion Searls (New York: New York Review of Books, 2009), p. 585 (entry for October 22, 1859).

³⁸ Krutch, *op.cit.*, p. 102.

³⁹ Michael P. Cohen, *The Pathless Way: John Muir and American Wilderness* (Madison: University of Wisconsin Press, 1984), pp. 173, 176.

⁴⁰ Jennifer Ham, “Taming the Beast,” in Jennifer Ham and Matthew Senior, eds., *Animal Acts* (New York: Routledge, 1997), p. 158.

⁴¹ Clive Roots, *Domestication* (Westport CT: Greenwood Press, 2007), p. xii.

The completely non-biocentric, humanist myth of immortality is part of the ethos of domestication, its rituals focused on sacrifice rather than on the freedom of pre-domesticated life. Freud's Oedipal family model is a product of jointly domesticated animals and the father. Lacan's formulations often stem from findings about caged animals, and Kristeva's notion of abjection or disturbing threat, at base, refers to the act of domesticating. But the non-domesticated do not participate in assimilation into the conquered whole, in Freudian terms or otherwise.

Once there was a communal life of organisms in an ecosystem. Life fed on life, but not in a destructive trajectory. Even now we should not forget that the victory of domestication is far from total. Many species, for various reasons, are outside its orbit. "The lion tamer doesn't actually tame anything," John Harrington reminds us. He must stay within the boundaries the cats have established.⁴²

"Almost everything about whales is a tantalizing mystery," concluded Diane Ackerman.⁴³ Wendell Berry quotes his daughter in his poem, "To the Unseeable Animal": "I hope there's an animal somewhere that nobody has ever seen. And I hope nobody ever sees it."⁴⁴ Do we need to know, can we know, so much about other animals? Maybe what we need most to know is that we could possibly join them in their non-domestication.

Kant was grievously wrong about human superiority. "As the single being on earth that possesses understanding, he is certainly titular lord of nature."⁴⁵ Walt Whitman provides a simple response: "Do not call the tortoise unworthy because she is not something else."⁴⁶ It is noteworthy that women dominate what is called animal ethology, and are far less prone to follow Kant's wrongheadedness.

The illusion of human domination of the natural world comes in many forms. One is the assumption that our prowess gives us long-range safety; we forget that this orientation can lead us into danger in the long run. Our lost connection, our lost awareness have led us into an age of horrors of every kind. And as Olaus Murie once said, "In the evolution of the human spirit, something much worse than hunger can happen to a people."⁴⁷

Jacques Derrida came to see the prime importance of the question of animality for humans, as pivotal to "the essence and future of humanity."⁴⁸ The image of a free animal initiates a daydream, the starting point from which the dreamer departs. Meanwhile the living reality, the communion among species, yet manage to survive. The Inupiat Eskimo and Gwich'in people, who still travel without maps and discern direction without compasses, know that the caribou carry a piece of them in their hearts, while they carry the caribou in their hearts.⁴⁹

The counsel of immediacy, of direct connection, has not been extinguished. "But ask now the beasts/ And they shall teach thee;/ And the fowls of the air/ And they shall teach thee;/ Or speak to the Earth/ And it shall teach thee." (Job 12: 7-8) In the Arctic Jonathan Waterman moved away from separation, from domestication: "I first removed my watch. My ability to isolate different

⁴² Quoted in Lane, op. cit., p. 125.

⁴³ Diane Ackerman, *The Moon by Whale Light* (New York: Random House, 1991), p. 112.

⁴⁴ Wendell Berry, "To the Unseeable Animal," in Ann Fisher-Wirth and Laura-Gray Street, eds., *The Ecopoetry Anthology* (San Antonio TX: Trinity University Press, 2013), p. 178.

⁴⁵ Immanuel Kant, trans. J.C. Meredith, *Critique of Judgement* (Oxford: Oxford University Press, 1952), Part 2, Section 431.

⁴⁶ Walt Whitman, *Leaves of Grass* (New York: Library of America, 2011), section 13.

⁴⁷ Quoted in Jonathan Waterman, *Where Mountains are Nameless* (New York: W.W. Norton, 2005), p. 237.

⁴⁸ Quoted in Leonard Lawlor, *This is Not Sufficient* (New York: Columbia University Press, 2007), p. 7.

⁴⁹ Waterman, op. cit., p. 212.

and unidentifiable smells became incredibly distracting. My hearing seemed to improve.”⁵⁰ Far from the Arctic, traces of this dimension have always been felt. Melville sensed in the sight of a sperm whale a colossal existence without which we are incomplete. One thinks of Virginia Woolf’s use of animal vocabularies and inter-species relations. Something whole, something unbroken, there millions of years before Homo showed up. Bequeathing to us what Henry Beston Sheahan called our “animal faith,” which he saw being destroyed by the Machine Age.⁵¹ We are lost, but other animals point to the right road. They are the right road.

We lack that state of grace, but we do know how much is in danger. Laurie Allman, taking in a Michigan songbird: “I can tell in a glance that he does not know he is endangered. He knows only that his job is to sing, this day, from the top of that young jack pine. His beak is open, full of the sky behind him.”⁵²

Here are Richard Grossman’s lines in favor of a return to the old joy: We shall forge a change of mind and come to understand the spirit as animal.⁵³ We are still animals on the planet, with all its original messages waiting in our being.

⁵⁰ Ibid., p. 10.

⁵¹ John Nelson, “Henry Beston Sheahan,” *Harvard Magazine*, September/October 2013, p. 40.

⁵² Laurie Allman, *Far From Tame* (Minneapolis: University of Minnesota Press, 1996), p. 73.

⁵³ Grossman, *op. cit.*, “The New Art,” p. 2.

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Future Primitive

John Zerzan

Division of labor, which has had so much to do with bringing us to the present global crisis, works daily to prevent our understanding the origins of this horrendous present. Mary Lecron Foster (1990) surely errs on the side of understatement in allowing that anthropology is today “in danger of serious and damaging fragmentation.” Shanks and Tilley (1987b) voice a rare, related challenge: “The point of archaeology is not merely to interpret the past but to change the manner in which the past is interpreted in the service of social reconstruction in the present.” Of course, the social sciences themselves work against the breadth and depth of vision necessary to such a reconstruction. In terms of human origins and development, the array of splintered fields and sub-fields — anthropology, archaeology, paleontology, ethnology, paleobotany, ethnoanthropology, etc., etc. — mirrors the narrowing, crippling effect that civilization has embodied from its very beginning.

Nonetheless, the literature can provide highly useful assistance, if approached with an appropriate method and awareness and the desire to proceed past its limitations. In fact, the weakness of more or less orthodox modes of thinking can and does yield to the demands of an increasingly dissatisfied society. Unhappiness with contemporary life becomes distrust with the official lies that are told to legitimate that life, and a truer picture of human development emerges. Renunciation and subjugation in modern life have long been explained as necessary concomitants of “human nature.” After all, our pre-civilized existence of deprivation, brutality, and ignorance made authority a benevolent gift that rescued us from savagery. “Cave man” and ‘Neanderthal’ are still invoked to remind us where we would be without religion, government, and toil.

This ideological view of our past has been radically overturned in recent decades, through the work of academics like Richard Lee and Marshall Sahlins. A nearly complete reversal in anthropological orthodoxy has come about, with important implications. Now we can see that life before domestication/agriculture was in fact largely one of leisure, intimacy with nature, sensual wisdom, sexual equality, and health. This was our human nature, for a couple of million years, prior to enslavement by priests, kings, and bosses.

And lately another stunning revelation has appeared, a related one that deepens the first and may be telling us something equally important about who we were and what we might again become. The main line of attack against new descriptions of gatherer-hunter life has been, though often indirect or not explicitly stated, to characterize that life, condescendingly, as the most an evolving species could achieve at an early stage. Thus, the argument allows that there was a

long period of apparent grace and pacific existence, but says that humans simply didn't have the mental capacity to leave simple ways behind in favor of complex social and technological achievement.

In another fundamental blow to civilization, we now learn that not only was human life once, and for so long, a state that did not know alienation or domination, but as the investigations since the '80s by archaeologists John Fowlett, Thomas Wynn, and others have shown, those humans possessed an intelligence at least equal to our own. At a stroke, as it were, the 'ignorance' thesis is disposed of, and we contemplate where we came from in a new light.

To put the issue of mental capacity in context, it is useful to review the various (and again, ideologically loaded) interpretations of human origins and development. Robert Ardrey (1961, 1976) served up a bloodthirsty, macho version of prehistory, as have to slightly lesser degrees, Desmond Morris and Lionel Tiger. Similarly, Freud and Konrad Lorenz wrote of the innate depravity of the species, thereby providing their contributions to hierarchy and power in the present.

Fortunately, a far more plausible outlook has emerged, one that corresponds to the overall version of Paleolithic life in general. Food sharing has for some time been considered an integral part of earliest human society (e.g. Washburn and DeVore, 1961). Jane Goodall (1971) and Richard Leakey (1978), among others, have concluded that it was the key element in establishing our uniquely Homo development at least as early as 2 million years ago. This emphasis, carried forward since the early '70s by Linton, Zihlman, Tanner, and Isaac, has become ascendant. One of the telling arguments in favor of the cooperation thesis, as against that of generalized violence and male domination, involves a diminishing, during early evolution, of the difference in size and strength between males and females. Sexual dimorphism, as it is called, was originally very pronounced, including such features as prominent canines or "fighting teeth" in males and much smaller canines for the female. The disappearance of large male canines strongly suggests that the female of the species exercised a selection for sociable, sharing males. Most apes today have significantly longer and larger canines, male to female, in the absence of this female choice capacity (Zihlman 1981, Tanner 1981).

Division of labor between the sexes is another key area in human beginnings, a condition once simply taken for granted and expressed by the term hunter-gatherer. Now it is widely accepted that gathering of plant foods, once thought to be the exclusive domain of women and of secondary importance to hunting by males, constituted the main food source (Johansen and Shreeve 1989). Since females were not significantly dependent on males for food (Hamilton 1984), it seems likely that rather than division of labor, flexibility and joint activity would have been central (Bender 1989). As Zihlman (1981) points out, an overall behavioral flexibility may have been the primary ingredient in early human existence. Joan Gero (1991) has demonstrated that stone tools were as likely to have been made by women as by men, and indeed Poirier (1987) reminds us that there is "no archaeological evidence supporting the contention that early humans exhibited a sexual division of labor." It is unlikely that food collecting involved much, if any division of labor (Slocum 1975) and probably that sexual specialization came quite late in human evolution (Zihlman 1981, Crader and Isaac 1981).

So if the adaptation that began our species centered on gathering, when did hunting come in? Binford (1984) has argued that there is no indication of use of animal products (i.e. evidence of butchery practices) until the appearance, relatively quite recent, of anatomically modern humans. Electron microscope studies of fossil teeth found in East Africa (Walker 1984) suggest a diet composed primarily of fruit, while a similar examination of stone tools from a 1.5 million-year-

old site at Koobi Fora in Kenya (Keeley and Toth 1981) shows that they were used on plant materials. The small amount of meat in the early Paleolithic diet was probably scavenged, rather than hunted (Ehrenberg 1989b).

The ‘natural’ condition of the species was evidently a diet made up largely of vegetables rich in fiber, as opposed to the modern high fat and animal protein diet with its attendant chronic disorders (Mendeloff 1977). Though our early forbears employed their “detailed knowledge of the environment and cognitive mapping” (Zihlman 1981) in the service of a plant-gathering subsistence, the archaeological evidence for hunting appears to slowly increase with time (Hodder 1991).

Much evidence, however, has overturned assumptions as to widespread prehistoric hunting. Collections of bones seen earlier as evidence of large kills of mammals, for example, have turned out to be, upon closer examination, the results of movement by flowing water or caches by animals. Lewis Binford’s “Were There Elephant Hunters at Tooralba?” (1989) is a good instance of such a closer look, in which he doubts there was significant hunting until 200,000 years ago or sooner. Adrienne Zihlman (1981) has concluded that “hunting arose relatively late in evolution,” and “may not extend beyond the last one hundred thousand years.” And there are many (e.g. Straus 1986, Trinkhaus 1986) who do not see evidence for serious hunting of large mammals until even later, viz. the later Upper Paleolithic, just before the emergence of agriculture.

The oldest known surviving artifacts are stone tools from Hadar in eastern Africa. With more refined dating methods, they may prove to be 3.1 million years old (Klein 1989). Perhaps the main reason these may be classified as representing human effort is that they involve the crafting of one tool by using another, a uniquely human attribute so far as we know. *Homo habilis*, or “handy man,” designates what has been thought of as the first known human species, its name reflecting association with the earliest stone tools (Coppens 1989). Basic wooden and bone implements, though more perishable and thus scantily represented in the archaeological record, were also used by *Homo habilis* as part of a “remarkably simple and effective” adaptation in Africa and Asia (Fagan 1990). Our ancestors at this stage had smaller brains and bodies than we do, but Poirier (1987) notes that “their postcranial anatomy was rather like modern humans,” and Holloway (1972, 1974) allows that his studies of cranial endocasts from this period indicate a basically modern brain organization. Similarly, tools older than 2 million years have been found to exhibit a consistent right-handed orientation in the ways stone has been flaked off in their formation. Right-handedness as a tendency is correlated in moderns with such distinctly human features as pronounced lateralization of the brain and marked functional separation of the cerebral hemispheres (Holloway 1981a). Klein (1989) concludes that “basic human cognitive and communicational abilities are almost certainly implied.”

Homo erectus is the other main predecessor to *Homo sapiens*, according to longstanding usage, appearing about 1.75 million years ago as humans moved out of forests into drier, more open African grasslands. Although brain size alone does not necessarily correlate with mental capacity, the cranial capacity of *Homo erectus* overlaps with that of moderns such that this species “must have been capable of many of the same behaviors” (Ciochon, Olsen and Tames 1990). As Johanson and Edey (1981) put it, “If the largest-brained *erectus* were to be rated against the smallest-brained *sapiens* — all their other characteristics ignored — their species names would have to be reversed.” *Homo Neanderthalus*, which immediately preceded us, possessed brains somewhat larger than our own (Delson 1985, Holloway 1985, Donald 1991). Though of course the much-maligned Neanderthal has been pictured as a primitive, brutish creature — in keep-

ing with the prevailing Hobbesian ideology — despite manifest intelligence as well as enormous physical strength (Shreeve 1991).

Recently, however, the whole species framework has become a doubtful proposition (Day 1987, Rightmire 1990). Attention has been drawn to the fact that fossil specimens from various *Homo* species “all show intermediate morphological traits,” leading to suspicion of an arbitrary division of humanity into separate taxa (Gingerich 1979, Tobias 1982). Fagan (1989), for example, tells us that “it is very hard to draw a clear taxonomic boundary between *Homo erectus* and archaic *Homo sapiens* on the one hand, and between archaic and anatomically modern *Homo sapiens* on the other.” Likewise, Foley (1989): “the anatomical distinctions between *Homo erectus* and *Homo sapiens* are not great.” Jelinek (1978) flatly declares that “there is no good reason, anatomical or cultural” for separating *erectus* and *sapiens* into two species, and has concluded (1980a) that people from at least the Middle Paleolithic onward “may be viewed as *Homo sapiens*” (as does Hublin 1986). The tremendous upward revision of early intelligence, discussed below, must be seen as connected to the present confusion over species, as the once-prevailing overall evolutionary model gives way.

But the controversy over species categorization is only interesting in the context of how our earliest forbears lived. Despite the minimal nature of what could be expected to survive so many millennia, we can glimpse some of the texture of that life, with its often elegant, pre-division of labor approaches. The “tool kit” from the Olduvai Gorge area made famous by the Leakeys contains “at least six clearly recognizable tool types” dating from about 1.7 million years ago (M. Leakey, 1978). There soon appeared the Acheulian handaxe, with its symmetrical beauty, in use for about a million years. Teardrop-shaped, and possessed of a remarkable balance, it exudes grace and utility from an era much prior to symbolization. Isaac (1986) noted that “the basic needs for sharp edges that humans have can be met from the varied range of forms generated from ‘Oldowan’ patterns of stone flaking,” wondering how it came to be thought that “more complex equals better adapted.” In this distant early time, according to cut-marks found on surviving bones, humans were using scavenged animal sinews and skins for such things as cord, bags, and rugs (Gowlett 1984). Further evidence suggests furs for cave wall coverings and seats, and seaweed beds for sleeping (Butzer 1970).

The use of fire goes back almost 2 million years (Kempe 1988) and might have appeared even earlier but for the tropical conditions of humanity’s original African homeland, as Poirier (1987) implies. Perfected fire-making included the firing of caves to eliminate insects and heated pebble floors (Perles 1975, Lumley 1976), amenities that show up very early in the Paleolithic.

As John Gowlett (1986) notes, there are still some archaeologists who consider anything earlier than *Homo sapiens*, a mere 30,000 years ago, as greatly more primitive than we “fully human” types. But along with the documentation, referred to above, of fundamentally ‘modern’ brain anatomy even in early humans, this minority must now contend with recent work depicting complete human intelligence as present virtually with the birth of the *Homo* species. Thomas Wynn (1985) judged manufacture of the Acheulian handaxe to have required “a stage of intelligence that is typical of fully modern adults.” Gowlett, like Wynn, examines the required “operational thinking” involved in the right hammer, the right force and the right striking angle, in an ordered sequence and with flexibility needed for modifying the procedure. He contends that manipulation, concentration, visualization of form in three dimensions, and planning were needed, and that these requirements “were the common property of early human beings as much as two million years ago, and this,” he adds, “is hard knowledge, not speculation.”

During the vast time-span of the Paleolithic, there were remarkably few changes in technology (Rolland 1990). Innovation, “over 2 1/2 million years measured in stone tool development was practically nil,” according to Gerhard Kraus (1990). Seen in the light of what we now know of prehistoric intelligence, such ‘stagnation’ is especially vexing to many social scientists. “It is difficult to comprehend such slow development,” in the judgment of Wymer (1989). It strikes me as very plausible that intelligence, informed by the success and satisfaction of a gatherer-hunter existence, is the very reason for the pronounced absence of ‘progress’. Division of labor, domestication, symbolic culture—these were evidently refused until very recently.

Contemporary thought, in its postmodern incarnation, would like to rule out the reality of a divide between nature and culture; given the abilities present among people before civilization, however, it may be more accurate to say that basically, they long chose nature over culture. It is also popular to see almost every human act or object as symbolic (e.g. Botscharow 1989), a position which is, generally speaking, part of the denial of a nature versus culture distinction. But it is culture as the manipulation of basic symbolic forms that is involved here. It also seems clear that reified time, language (written, certainly, and probably spoken language for all or most of this period), number, and art had no place, despite an intelligence fully capable of them.

I would like to interject, in passing, my agreement with Goldschmidt (1990) that “the hidden dimension in the construction of the symbolic world is time.” And as Norman O. Brown put it, “life not repressed is not in historical time,” which I take as a reminder that time as a materiality is not inherent in reality, but a cultural imposition, perhaps the first cultural imposition, on it. As this elemental dimension of symbolic culture progresses, so does, by equal steps, alienation from the natural.

Cohen (1974) has discussed symbols as “essential for the development and maintenance of social order.” Which implies—as does, more forcefully, a great deal of positive evidence—that before the emergence of symbols there was no condition of disorder requiring them. In a similar vein, Levi-Strauss (1953) pointed out that “mythical thought always progresses from the awareness of oppositions toward their resolution.” So whence the absence of order, the conflicts or “oppositions?” The literature on the Paleolithic contains almost nothing that deals with this essential question, among thousands of monographs on specific features. A reasonable hypothesis, in my opinion, is that division of labor, unnoticed because of its glacially slow pace, and not sufficiently understood because of its newness, began to cause small fissures in the human community and unhealthy practices vis-a-vis nature. In the later Upper Paleolithic, “15,000 years ago, we begin to observe specialized collection of plants in the Middle East, and specialized hunting,” observed Gowlett (1984). The sudden appearance of symbolic activities (e.g. ritual and art) in the Upper Paleolithic has definitely seemed to archaeologists one of prehistory’s “big surprises” (Binford 1972b), given the absence of such behaviors in the Middle Paleolithic (Foster 1990, Kozłowski 1990). But signs of division of labor and specialization were making their presence felt as a breakdown of wholeness and natural order, a lack that needed redressing. What is surprising is that this transition to civilization can still be seen as benign. Foster (1990) seems to celebrate it by concluding that the “symbolic mode...has proved extraordinarily adaptive, else why has *Homo sapiens* become material master of the world?” He is certainly correct, as he is to recognize “the manipulation of symbols [to be] the very stuff of culture,” but he appears oblivious to the fact that this successful adaptation has brought alienation and destruction of nature along to their present horrifying prominence.

It is reasonable to assume that the symbolic world originated in the formulation of language, which somehow appeared from a “matrix of extensive nonverbal communication” (Tanner and Zihlman 1976) and face-to-face contact. There is no agreement as to when language began, but no evidence exists of speech before the cultural ‘explosion’ of the later Upper Paleolithic (Dibble 1984, 1989). It seems to have acted as an “inhibiting agent,” a way of bringing life under “greater control” (Mumford 1972), stemming the flood of images and sensations to which the pre-modern individual was open. In this sense it would have likely marked an early turning away from a life of openness and communion with nature, toward one more oriented to the overlordship and domestication that followed symbolic culture’s inauguration. It is probably a mistake, by the way, to assume that thought is advanced (if there were such a thing as ‘neutral’ thought, whose advance could be universally appreciated) because we actually think in language; there is no conclusive evidence that we must do so (Allport 1983). There are many cases (Lecours and Joannette 1980, Levine et al. 1982), involving stroke and like impairments, of patients who have lost speech, including the ability to talk silently to themselves, who were fully capable of coherent thought of all kinds. These data strongly suggest that “human intellectual skill is uniquely powerful, even in the absence of language” (Donald 1991).

In terms of symbolization in action, Goldschmidt (1990) seems correct in judging that “the Upper Paleolithic invention of ritual may well have been the keystone in the structure of culture that gave it its great impetus for expansion.” Ritual has played a number of pivotal roles in what Hodder (1990) termed “the relentless unfolding of symbolic and social structures” accompanying the arrival of cultural mediation. It was as a means of achieving and consolidating social cohesion that ritual was essential (Johnson 1982, Conkey 1985); totemic rituals, for example, reinforce clan unity.

The start of an appreciation of domestication, or taming of nature, is seen in a cultural ordering of the wild, through ritual. Evidently, the female as a cultural category, viz. seen as wild or dangerous, dates from this period. The ritual “Venus” figurines appear as of 25,000 years ago, and seem to be an example of earliest symbolic likeness of women for the purpose of representation and control (Hodder 1990). Even more concretely, subjugation of the wild occurs at this time in the first systematic hunting of large mammals; ritual was an integral part of this activity (Hammond 1974, Frison 1986).

Ritual, as shamanic practice, may also be considered as a regression from that state in which all shared a consciousness we would now classify as extrasensory (Leonard 1972). When specialists alone claim access to such perceptual heights as may have once been communal, further backward moves in division of labor are facilitated or enhanced. The way back to bliss through ritual is a virtually universal mythic theme, promising the dissolution of measurable time, among other joys. This theme of ritual points to an absence that it falsely claims to fill, as does symbolic culture in general.

Ritual as a means of organizing emotions, a method of cultural direction and restraint, introduces art, a facet of ritual expressiveness (Bender 1989). “There can be little doubt,” to Gans (1985), “that the various forms of secular art derive originally from ritual.” We can detect the beginning of an unease, a feeling that an earlier, direct authenticity is departing. La Barre (1972), I believe, is correct in judging that “art and religion alike arise from unsatisfied desire.” At first, more abstractly as language, then more purposively as ritual and art, culture steps in to deal artificially with spiritual and social anxiety.

Ritual and magic must have dominated early (Upper Paleolithic) art and were probably essential, along with an increasing division of labor, for the coordination and direction of community (Wymer 1981). Similarly, Pfeiffer (1982) has depicted the famous Upper Paleolithic European cave paintings as the original form of initiating youth into now complex social systems; as necessary for order and discipline (see also Gamble 1982, Jochim 1983). And art may have contributed to the control of nature, as part of development of the earliest territorialism, for example (Straus 1990).

The emergence of symbolic culture, with its inherent will to manipulate and control, soon opened the door to domestication of nature. After two million years of human life within the bounds of nature, in balance with other wild species, agriculture changed our lifestyle, our way of adapting, in an unprecedented way. Never before has such a radical change occurred in a species so utterly and so swiftly (Pfeiffer 1977). Self-domestication through language, ritual, and art inspired the taming of plants and animals that followed. Appearing only 10,000 years ago, farming quickly triumphed; for control, by its very nature, invites intensification. Once the will to production broke through, it became more productive the more efficiently it was exercised, and hence more ascendant and adaptive.

Agriculture enables greatly increased division of labor, establishes the material foundations of social hierarchy, and initiates environmental destruction. Priests, kings, drudgery, sexual inequality, warfare are a few of its fairly immediate specific consequences (Ehrenberg 1986b, Wymer 1981, Festinger 1983). Whereas Paleolithic peoples enjoyed a highly varied diet, using several thousand species of plants for food, with farming these sources were vastly reduced (White 1959, Gouldie 1986).

Given the intelligence and the very great practical knowledge of Stone Age humanity, the question has often been asked, "Why didn't agriculture begin, at say, 1,000,000 B.C. rather than about 8,000 B.C.?" I have provided a brief answer in terms of slowly accelerating alienation in the form of division of labor and symbolization, but given how negative the results were, it is still a bewildering phenomenon. Thus, as Binford (1968) put it, "The question to be asked is not why agriculture...was not developed everywhere, but why it was developed at all." The end of gatherer-hunter life brought a decline in size, stature, and skeletal robusticity (Cohen and Armelagos 1981, Harris and Ross 1981), and introduced tooth decay, nutritional deficiencies, and most infectious diseases (Larsen 1982, Buikstra 1976a, Cohen 1981). "Taken as a whole...an overall decline in the quality—and probably the length—of human life," concluded Cohen and Armelagos (1981).

Another outcome was the invention of number, unnecessary before the ownership of crops, animals, and land that is one of agriculture's hallmarks. The development of number further impelled the urge to treat nature as something to be dominated. Writing was also required by domestication, for the earliest business transactions and political administration (Larsen 1988). Levi-Strauss has argued persuasively that the primary function of written communication was to facilitate exploitation and subjugation (1955); cities and empires, for example, would be impossible without it. Here we see clearly the joining of the logic of symbolization and the growth of capital.

Conformity, repetition, and regularity were the keys to civilization upon its triumph, replacing the spontaneity, enchantment, and discovery of the pre-agricultural human state that survived so very long. Clark (1979) cites a gatherer-hunter "amplitude of leisure," deciding "it was this and the pleasurable way of life that went with it, rather than penury and a day-long grind, that explains why social life remained so static." One of the most enduring and widespread myths is that there

was once a Golden Age, characterized by peace and innocence, and that something happened to destroy this idyll and consign us to misery and suffering. Eden, or whatever name it goes by, was the home of our primeval forager ancestors, and expresses the yearning of disillusioned tillers of the soil for a lost life of freedom and relative ease.

The once rich environs people inhabited prior to domestication and agriculture are now virtually nonexistent. For the few remaining foragers there exist only the most marginal lands, those isolated places as yet unwanted by agriculture. And surviving gatherer-hunters, who have somehow managed to evade civilization's tremendous pressures to turn them into slaves (i.e. farmers, political subjects, wage laborers), have all been influenced by contact with outside peoples (Lee 1976, Mithen 1990).

Duffy (1984) points out that the present day gatherer-hunters he studied, the Mbuti Pygmies of central Africa, have been acculturated by surrounding villager-agriculturalists for hundreds of years, and to some extent, by generations of contact with government authorities and missionaries. And yet it seems that an impulse toward authentic life can survive down through the ages: "Try to imagine," he counsels, "a way of life where land, shelter, and food are free, and where there are no leaders, bosses, politics, organized crime, taxes, or laws. Add to this the benefits of being part of a society where everything is shared, where there are no rich people and no poor people, and where happiness does not mean the accumulation of material possessions." The Mbuti have never domesticated animals or planted crops.

Among the members of non-agriculturalist bands resides a highly sane combination of little work and material abundance. Bodley (1976) discovered that the San (aka Bushmen) of the harsh Kalahari Desert of southern Africa work fewer hours, and fewer of their number work, than do the neighboring cultivators. In times of drought, moreover, it has been the San to whom the farmers have turned for their survival (Lee 1968). They spend "strikingly little time laboring and much time at rest and leisure," according to Tanaka (1980), while others (e.g. Marshall 1976, Guenther 1976) have commented on San vitality and freedom compared with sedentary farmers, their relatively secure and easygoing life.

Flood (1983) noted that to Australian aborigines "the labour involved in tilling and planting outweighed the possible advantages." Speaking more generally, Tanaka (1976) has pointed to the abundant and stable plant foods in the society of early humanity, just as "they exist in every modern gatherer society." Likewise, Festinger (1983) referred to Paleolithic access to "considerable food without a great deal of effort," adding that "contemporary groups that still live on hunting and gathering do very well, even though they have been pushed into very marginal habitats."

As Hole and Flannery (1963) summarized: "No group on earth has more leisure time than hunters and gatherers, who spend it primarily on games, conversation and relaxing." They have much more free time, adds Binford (1968), "than do modern industrial or farm workers, or even professors of archaeology."

The non-domesticated know that, as Vaneigem (1975) put it, only the present can be total. This by itself means that they live life with incomparably greater immediacy, density and passion than we do. It has been said that some revolutionary days are worth centuries; until then "We look before and after," as Shelley wrote, "And sigh for what is not..."

The Mbuti believe (Turnbull 1976) that "by a correct fulfillment of the present, the past and the future will take care of themselves." Primitive peoples do not live through memories, and generally have no interest in birthdays or measuring their ages (Cipriani 1966). As for the future, they have little desire to control what does not yet exist, just as they have little desire to control

nature. Their moment-by-moment joining with the flux and flow of the natural world does not preclude an awareness of the seasons, but this does not constitute an alienated time consciousness that robs them of the present.

Though contemporary gatherer-hunters eat more meat than their pre-historic forbears, vegetable foods still constitute the mainstay of their diet in tropical and subtropical regions (Lee 1968a, Yellen and Lee 1976). Both the Kalahari San and the Hazda of East Africa, where game is more abundant than in the Kalahari, rely on gathering for 80 percent of their sustenance (Tanaka 1980). The !Kung branch of the San search for more than a hundred different kinds of plants (Thomas 1968) and exhibit no nutritional deficiency (Truswell and Hansen 1976). This is similar to the healthful, varied diet of Australian foragers (Fisher 1982, Flood 1983). The overall diet of gatherers is better than that of cultivators, starvation is very rare, and their health status generally superior, with much less chronic disease (Lee and Devore 1968a, Ackerman 1990).

Lauren van der Post (1958) expressed wonder at the exuberant San laugh, which rises “sheer from the stomach, a laugh you never hear among civilized people.” He found this emblematic of a great vigor and clarity of senses that yet manages to withstand and elude the onslaught of civilization. Truswell and Hansen (1976) may have encountered it in the person of a San who had survived an unarmed fight with a leopard; although injured, he had killed the animal with his bare hands.

The Andaman Islanders, west of Thailand, have no leaders, no idea of symbolic representation, and no domesticated animals. There is also an absence of aggression, violence, and disease; wounds heal surprisingly quickly, and their sight and hearing are particularly acute. They are said to have declined since European intrusion in the mid-19th century, but exhibit other such remarkable physical traits as a natural immunity to malaria, skin with sufficient elasticity to rule out post-childbirth stretch marks and the wrinkling we associate with ageing, and an ‘unbelievable’ strength of teeth: Cipriani (1966) reported seeing children of 10 to 15 years crush nails with them. He also testified to the Andamese practice of collecting honey with no protective clothing at all; “yet they are never stung, and watching them one felt in the presence of some age-old mystery, lost by the civilized world.”

DeVries (1952) has cited a wide range of contrasts by which the superior health of gatherer-hunters can be established, including an absence of degenerative diseases and mental disabilities, and childbirth without difficulty or pain. He also points out that this begins to erode from the moment of contact with civilization.

Relatedly, there is a great deal of evidence not only for physical and emotional vigor among primitives but also concerning their heightened sensory abilities. Darwin described people at the southernmost tip of South America who went about almost naked in frigid conditions, while Peasley (1983) observed Aborigines who were renowned for their ability to live through bitterly cold desert nights “without any form of clothing.” Levi-Strauss (1979) was astounded to learn of a particular [South American] tribe which was able to “see the planet Venus in full daylight,” a feat comparable to that of the North African Dogon who consider Sirius B the most important star; somehow aware, without instruments, of a star that can only be found with the most powerful of telescopes (Temple 1976). In this vein, Boyden (1970) recounted the Bushman ability to see four of the moons of Jupiter with the naked eye.

In *The Harmless People* (1959), Marshall told how one Bushman walked unerringly to a spot in a vast plain, “with no bush or tree to mark place,” and pointed out a blade of grass with an almost invisible filament of vine around it. He had encountered it months before in the rainy

season when it was green. Now, in parched weather, he dug there to expose a succulent root and quenched his thirst. Also in the Kalahari Desert, van der Post (1958) meditated upon San/Bushman communion with nature, a level of experience that “could almost be called mystical. For instance, they seemed to know what it actually felt like to be an elephant, a lion, an antelope, a steenbuck, a lizard, a striped mouse, mantis, baobab tree, yellow-crested cobra or starry-eyed amaryllis, to mention only a few of the brilliant multitudes through which they moved.” It seems almost pedestrian to add that gatherer-hunters have often been remarked to possess tracking skills that virtually defy rational explanation (e.g. Lee 1979).

Rohrlich-Leavitt (1976) noted, “The data show that gatherer-hunters are generally non-territorial and bilocal; reject group aggression and competition; share their resources freely; value egalitarianism and personal autonomy in the context of group cooperation; and are indulgent and loving with children.” Dozens of studies stress communal sharing and egalitarianism as perhaps the defining traits of such groups (e.g. Marshall 1961 and 1976, Sahlins 1968, Pilbeam 1972, Damas 1972, Diamond 1974, Laitau 1974, Tanaka 1976 and 1980, Wiessner 1977, Morris 1982, Riches 1982, Smith 1988, Mithen 1990). Lee (1982) referred to the “universality among foragers” of sharing, while Marshall’s classic 1961 work spoke of the “ethic of generosity and humility” informing a “strongly egalitarian” gatherer-hunter orientation. Tanaka provides a typical example: “The most admired character trait is generosity, and the most despised and disliked are stinginess and selfishness.”

Baer (1986) listed “egalitarianism, democracy, personalism, individuation, nurturance” as key virtues of the non-civilized, and Lee (1988) cited “an absolute aversion to rank distinctions” among “simple foraging peoples around the world.” Leacock and Lee (1982) specified that “any assumption of authority” within the group “leads to ridicule or anger among the !Kung, as has been recorded for the Mbuti (Turnbull 1962), the Hazda (Woodburn 1980) and the Montagnais-Naskapi (Thwaites 1906), among others.”

“Not even the father of an extended family can tell his sons and daughters what to do. Most people appear to operate on their own internal schedules,” reported Lee (1972) of the !Kung of Botswana. Ingold (1987) judged that “in most hunting and gathering societies, a supreme value is placed upon the principle of individual autonomy,” similar to Wilson’s finding (1988) of “an ethic of independence” that is “common to the focused open societies.” The esteemed field anthropologist Radin (1953) went so far as to say: “Free scope is allowed for every conceivable kind of personality outlet or expression in primitive society. No moral judgment is passed on any aspect of human personality as such.”

Turnbull (1976) looked on the structure of Mbuti social life as “an apparent vacuum, a lack of internal system that is almost anarchical.” According to Duffy (1984), “the Mbuti are naturally acephalous — they do not have leaders or rulers, and decisions concerning the band are made by consensus.” There is an enormous qualitative difference between foragers and farmers in this regard, as in so many others. For instance, agricultural Bantu tribes (e.g. the Saga) surround the San, and are organized by kingship, hierarchy and work; the San exhibit egalitarianism, autonomy, and sharing. Domestication is the principle which accounts for this drastic distinction.

Domination within a society is not unrelated to domination of nature. In gatherer-hunter societies, on the other hand, no strict hierarchy exists between the human and the non-human species (Noske 1989), and relations among foragers are likewise non-hierarchical. The non-domesticated typically view the animals they hunt as equals; this essentially egalitarian relationship is ended by the advent of domestication.

When progressive estrangement from nature became outright social control (agriculture), more than just social attitudes changed. Descriptions by sailors and explorers who arrived in “newly discovered” regions tell how wild mammals and birds originally showed no fear at all of the human invaders (Brock 1981). A few contemporary gatherers practiced no hunting before outside contact, but while the majority certainly do hunt, “it is not normally an aggressive act” (Rohrlich-Leavitt 1976). Turnbull (1965) observed Mbuti hunting as quite without any aggressive spirit, even carried out with a sort of regret. Hewitt (1986) reported a sympathy bond between hunter and hunted among the Xan Bushmen he encountered in the 19th century.

As regards violence among gatherer-hunters, Lee (1988) found that “the !Kung hate fighting, and think anybody who fought would be stupid.” The Mbuti, by Duffy’s account (1984), “look on any form of violence between one person and another with great abhorrence and distaste, and never represent it in their dancing or playacting.” Homicide and suicide, concluded Bodley (1976), are both “decidedly uncommon” among undisturbed gatherer-hunters. The ‘warlike’ nature of Native American peoples was often fabricated to add legitimacy to European aims of conquest (Kroeber 1961); the foraging Comanche maintained their non-violent ways for centuries before the European invasion, becoming violent only upon contact with marauding civilization (Fried 1973).

The development of symbolic culture, which rapidly led to agriculture, is linked through ritual to alienated social life among extant foraging groups. Bloch (1977) found a correlation between levels of ritual and hierarchy. Put negatively, Woodburn (1968) could see the connection between an absence of ritual and the absence of specialized roles and hierarchy among the Hazda of Tanzania. Turner’s study of the west African Ndembu (1957) revealed a profusion of ritual structures and ceremonies intended to redress the conflicts arising from the breakdown of an earlier, more seamless society. These ceremonies and structures function in a politically integrative way. Ritual is a repetitive activity for which outcomes and responses are essentially assured by social contract; it conveys the message that symbolic practice, via group membership and social rules, provides control (Cohen 1985). Ritual fosters the concept of control or domination, and has been seen to tend toward leadership roles (Hitchcock 1982) and centralized political structures (Lourandos 1985). A monopoly of ceremonial institutions clearly extends the concept of authority (Bender 1978), and may itself be the original formal authority.

Among agricultural tribes of New Guinea, leadership and the inequality it implies are based upon participation in hierarchies of ritual initiation or upon shamanistic spirit-mediumship (Kelly 1977, Modjeska 1982). In the role of shamans we see a concrete practice of ritual as it contributes to domination in human society.

Radin (1937) discussed “the same marked tendency” among Asian and North American tribal peoples for shamans or medicine men “to organize and develop the theory that they alone are in communication with the supernatural.” This exclusive access seems to empower them at the expense of the rest; Lommel (1967) saw “an increase in the shaman’s psychic potency...counterbalanced by a weakening of potency in other members of the group.” This practice has fairly obvious implications for power relationships in other areas of life, and contrasts with earlier periods devoid of religious leadership.

The Batuque of Brazil are host to shamans who each claim control over certain spirits and attempt to sell supernatural services to clients, rather like priests of competing sects (S. Leacock 1988). Specialists of this type in “magically controlling nature...would naturally come to control men, too,” in the opinion of Muller (1961). In fact, the shaman is often the most powerful in-

dividual in pre-agricultural societies (e.g. Sheehan 1985); he is in a position to institute change. Johannessen (1987) offers the thesis that resistance to the innovation of planting was overcome by the influence of shamans, among the Indians of the American Southwest, for instance. Similarly, Marquardt (1985) has suggested that ritual authority structures have played an important role in the initiation and organization of production in North America. Another student of American groups (Ingold 1987) saw an important connection between shamans' role in mastering wildness in nature and an emerging subordination of women.

Berndt (1974a) has discussed the importance among Aborigines of ritual sexual division of labor in the development of negative sex roles, while Randolph (1988) comes straight to the point: "Ritual activity is needed to create 'proper' men and women." There is "no reason in nature" for gender divisions, argues Bender (1989). "They have to be created by proscription and taboo, they have to be 'naturalized' through ideology and ritual."

But gatherer-hunter societies, by their very nature, deny ritual its potential to domesticate women. The structure (non-structure?) of egalitarian bands, even those most oriented toward hunting, includes a guarantee of autonomy to both sexes. This guarantee is the fact that the materials of subsistence are equally available to women and men and that, further, the success of the band is dependent on cooperation based on that autonomy (Leacock 1978, Friedl 1975). The spheres of the sexes are often somewhat separate, but inasmuch as the contribution of women is generally at least equal to that of men, social equality of the sexes is "a key feature of forager societies" (Ehrenberg 1989b). Many anthropologists, in fact, have found the status of women in forager groups to be higher than in any other type of society (e.g. Fluer-Lobban 1979, Rohrlach-Leavitt, Sykes and Weatherford 1975, Leacock 1978).

In all major decisions, observed Turnbull (1970) of the Mbuti, "men and women have equal say, hunting and gathering being equally important." He made it clear (1981) that there is sexual differentiation — probably a good deal more than was the case with their distant forbears — "but without any sense of superordination or subordination." Men actually work more hours than women among the !Kung, according to Post and Taylor (1984).

It should be added, in terms of the division of labor common among contemporary gatherer-hunters, that this differentiation of roles is by no means universal. Nor was it when the Roman historian Tacitus wrote, of the Fenni of the Baltic region, that "the women support themselves by hunting, exactly like the men...and count their lot happier than that of others who groan over field labor." Or when Procopius found, in the 6th century A.D., that the Serithifinni of what is now Finland "neither till the land themselves, nor do their women work it for them, but the women regularly join the men in hunting."

The Tiwi women of Melville Island regularly hunt (Martin and Voorhies 1975) as do the Agta women in the Philippines (Estioko-Griffen and Griffen 1981). In Mbuti society, "there is little specialization according to sex. Even the hunt is a joint effort," reports Turnbull (1962), and Cotlow (1971) testifies that "among the traditional Eskimos it is (or was) a cooperative enterprise for the whole family group."

Darwin (1871) found another aspect of sexual equality: "...in utterly barbarous tribes the women have more power in choosing, rejecting, and tempting their lovers, or of afterwards changing their husbands, than might have been expected." The !Kung Bushmen and Mbuti exemplify this female autonomy, as reported by Marshall (1959) and Thomas (1965); "Women apparently leave a man whenever they are unhappy with their marriage," concluded Begler (1978). Marshall (1970) also found that rape was extremely rare or absent among the !Kung.

An intriguing phenomenon concerning gatherer-hunter women is their ability to prevent pregnancy in the absence of any contraception (Silberbauer 1981). Many hypotheses have been put forth and debunked, e.g. conception somehow related to levels of body fat (Frisch 1974, Leibowitz 1986). What seems a very plausible explanation is based on the fact that undomesticated people are very much more in tune with their physical selves. Foraging women's senses and processes are not alienated from themselves or dulled; control over childbearing is probably less than mysterious to those whose bodies are not foreign objects to be acted upon.

The Pygmies of Zaire celebrate the first menstrual period of every girl with a great festival of gratitude and rejoicing (Turnbull 1962). The young woman feels pride and pleasure, and the entire band expresses its happiness. Among agricultural villagers, however, a menstruating woman is regarded as unclean and dangerous, to be quarantined by taboo (Duffy 1984). The relaxed, egalitarian relationship between San men and women, with its flexibility of roles and mutual respect impressed Draper (1971, 1972, 1975); a relationship, she made clear, that endures as long as they remain gatherer-hunters and no longer.

Duffy (1984) found that each child in an Mbuti camp calls every man father and every woman mother. Forager children receive far more care, time, and attention than do those in civilization's isolated nuclear families. Post and Taylor (1984) described the "almost permanent contact" with their mothers and other adults that Bushman children enjoy. !Kung infants studied by Ainsworth (1967) showed marked precocity of early cognitive and motor skills development. This was attributed both to the exercise and stimulation produced by unrestricted freedom of movement, and to the high degree of physical warmth and closeness between !Kung parents and children (see also Konner 1976).

Draper (1976) could see that "competitiveness in games is almost entirely lacking among the !Kung," as Shostack (1976) observed "!Kung boys and girls playing together and sharing most games." She also found that children are not prevented from experimental sex play, consonant with the freedom of older Mbuti youth to "indulge in premarital sex with enthusiasm and delight" (Turnbull 1981). The Zuni "have no sense of sin," Ruth Benedict (1946) wrote in a related vein. "Chastity as a way of life is regarded with great disfavor...Pleasant relations between the sexes are merely one aspect of pleasant relations with human beings...Sex is an incident in a happy life."

Coontz and Henderson (1986) point to a growing body of evidence in support of the proposition that relations between the sexes are most egalitarian in the simplest foraging societies. Women play an essential role in traditional agriculture, but receive no corresponding status for their contribution, unlike the case of gatherer-hunter society (Chevallard and Leconte 1986, Whyte 1978). As with plants and animals, so are women subject to domestication with the coming of agriculture. Culture, securing its foundations with the new order, requires the firm subjugation of instinct, freedom, and sexuality. All disorder must be banished, the elemental and spontaneous taken firmly in hand. Women's creativity and their very being as sexual persons are pressured to give way to the role, expressed in all peasant religions, of Great Mother, that is, fecund breeder of men and food.

The men of the South American Munduruc, a farming tribe, refer to plants and sex in the same phrase about subduing women: "We tame them with the banana" (Murphy and Murphy 1985). Simone de Beauvoir (1949) recognized in the equation of the plow and the phallus a symbol of male authority over women. Among the Amazonian Jivaro, another agricultural group, women are beasts of burden and the personal property of men (Harner 1972); the "abduction of adult

women is a prominent part of much warfare” by these lowland South American tribes (Ferguson 1988). Brutalization and isolation of women seem to be functions of agricultural societies (Gregor 1988), and the female continues to perform most or even all of the work in such groups (Morgan 1985).

Head-hunting is practiced by the above-mentioned groups, as part of endemic warfare over coveted agricultural land (Lathrap 1970); head-hunting and near-constant warring is also witnessed among the farming tribes of Highlands New Guinea (Watson 1970). Lenski and Lenski’s 1974 researches concluded that warfare is rare among foragers but becomes extremely common with agrarian societies. As Wilson (1988) put it succinctly, “Revenge, feuds, rioting, warfare and battle seem to emerge among, and to be typical of, domesticated peoples.”

Tribal conflicts, Godelier (1977) argues, are “explainable primarily by reference to colonial domination” and should not be seen as having an origin “in the functioning of pre-colonial structures.” Certainly contact with civilization can have an unsettling, degenerative effect, but Godelier’s marxism (viz. unwillingness to question domestication/production), is, one suspects, relevant to such a judgment. Thus it could be said that the Copper Eskimos, who have a significant incidence of homicide within their group (Damas 1972), owe this violence to the impact of outside influences, but their reliance on domesticated dogs should also be noted.

Arens (1979) has asserted, paralleling Godelier to some extent, that cannibalism as a cultural phenomenon is a fiction, invented and promoted by agencies of outside conquest. But there is documentation of this practice (e.g. Poole 1983, Tuzin 1976) among, once again, peoples involved in domestication. The studies by Hogg (1966), for example, reveal its presence among certain African tribes, steeped in ritual and grounded in agriculture. Cannibalism is generally a form of cultural control of chaos, in which the victim represents animality, or all that should be tamed (Sanday 1986). Significantly, one of the important myths of Fiji Islanders, “How the Fijians first became cannibals,” is literally a tale of planting (Sahlins 1983). Similarly, the highly domesticated and time-conscious Aztecs practiced human sacrifice as a gesture to tame unruly forces and uphold the social equilibrium of a very alienated society. As Norbeck (1961) pointed out, non-domesticated, “culturally impoverished” societies are devoid of cannibalism and human sacrifice.

As for one of the basic underpinnings of violence in more complex societies, Barnes (1970) found that “reports in the ethnographic literature of territorial struggles” between gatherer-hunters are “extremely rare.” !Kung boundaries are vague and undefended (Lee 1979); Pandaram territories overlap, and individuals go where they please (Morris 1982); Hazda move freely from region to region (Woodburn 1968); boundaries and trespass have little or no meaning to the Mbuti (Turnbull 1966); and Australian Aborigines reject territorial or social demarcations (Gumpert 1981, Hamilton 1982). An ethic of generosity and hospitality takes the place of exclusivity (Steward 1968, Hiatt 1968).

Gatherer-hunter peoples have developed “no conception of private property,” in the estimation of Kitwood (1984). As noted above in reference to sharing, and with Sansom’s (1980) characterization of Aborigines as “people without property,” foragers do not share civilization’s obsession with externals.

“Mine and thine, the seeds of all mischief, have no place with them,” wrote Pietro (1511) of the native North Americans encountered on the second voyage of Columbus. The Bushmen have “no sense of possession,” according to Post (1958), and Lee (1972) saw them making “no sharp dichotomy between the resources of the natural environment and the social wealth.” There is a line between nature and culture, again, and the non-civilized choose the former.

There are many gatherer-hunters who could carry all that they make use of in one hand, who die with pretty much what they had as they came into the world. Once humans shared everything; with agriculture, ownership becomes paramount and a species presumes to own the world. A deformation the imagination could scarcely equal.

Sahlins (1972) spoke of this eloquently: "The world's most primitive people have few possessions, but they are not poor. Poverty is not a certain small amount of goods, nor is it just a relation between means and ends; above all, it is a relation between people. Poverty is a social status. As such it is the invention of civilization."

The "common tendency" of gatherer-hunters "to reject farming until it was absolutely thrust upon them" (Bodley 1976) bespeaks a nature/culture divide also present in the Mbuti recognition that if one of them becomes a villager he is no longer an Mbuti (Turnbull 1976). They know that forager band and agriculturalist village are opposed societies with opposed values.

At times, however, the crucial factor of domestication can be lost sight of. "The historic foraging populations of the Western Coast of North America have long been considered anomalous among foragers," declared Cohen (1981); as Kelly (1991) also put it, "tribes of the Northwest Coast break all the stereotypes of hunter-gatherers." These foragers, whose main sustenance is fishing, have exhibited such alienated features as chiefs, hierarchy, warfare and slavery. But almost always overlooked are their domesticated tobacco and domesticated dogs. Even this celebrated 'anomaly' contains features of domestication. Its practice, from ritual to production, with various accompanying forms of domination, seems to anchor and promote the facets of decline from an earlier state of grace.

Thomas (1981) provides another North American example, that of the Great Basin Shoshones and three of their component societies, the Kawich Mountain Shoshones, Reese River Shoshones, and Owens Valley Paiutes. The three groups showed distinctly different levels of agriculture, with increasing territoriality or ownership and hierarchy closely corresponding to higher degrees of domestication.

To 'define' a disalienated world would be impossible and even undesirable, but I think we can and should try to reveal the unworld of today and how it got this way. We have taken a monstrously wrong turn with symbolic culture and division of labor, from a place of enchantment, understanding and wholeness to the absence we find at the heart of the doctrine of progress. Empty and emptying, the logic of domestication with its demand to control everything now shows us the ruin of the civilization that ruins the rest. Assuming the inferiority of nature enables the domination of cultural systems that soon will make the very earth uninhabitable.

Postmodernism says to us that a society without power relations can only be an abstraction (Foucault, 1982). This is a lie unless we accept the death of nature and renounce what once was and what we can find again. Turnbull spoke of the intimacy between Mbuti people and the forest, dancing almost as if making love to the forest. In the bosom of a life of equals that is no abstraction, that struggles to endure, they were "dancing with the forest, dancing with the moon."

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John Zerzan
Future Primitive

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How Ruinous Does it Have To Get?

John Zerzan

Recent developments make an all-encompassing crisis plain to see. Society could scarcely be more bizarrely unhealthy, but is getting even more so all the time. With two million people behind bars, kids as young as two are on behavior control drugs like Ritalin. *Sunset* magazine carries pages of ads for “boot camps.” “Got an angry child?” “Defiant teen?”

A recent national study disclosed that emotional disorders among children have more than doubled in the past 20 years. Homicidal outbursts at school, as deeply shocking as they are, correspond to murderous rampages at work or at Burger King. Meanwhile, the trend toward year-round schooling feeds into the current prospect of a lifetime of more and more hours of work.

Last November a *U.S. News & World Report* survey announced that over 90 percent of students cheat. No surprise, where a similarly high percentage of citizens feel cynicism/no confidence concerning most of the ruling institutions.

Youthful smoking is on the rise; so are binge drinking, and health threatening obesity. And as with adults, kids’ levels of anxiety, stress, isolation, and boredom are going up. TV fare is shock — and peep — show tabloid oriented for the increasing jaded. *USA Today* for July 18 pondered “Why America is so short-tempered,” as road rage erupts and parents get violent — to the point of murder — at Little League games.

It was recently reported that drug abuse and addiction in Oregon went up 232 percent from 1995 to 1999. On the national level, one out every three people say they have felt close to a nervous breakdown at some point, according to a study released in early July. The assortment of “healing” and alternative therapy approaches multiplies, perhaps in proportion to a massive and pervasive denial of the root causes of all the suffering and estrangement.

Meanwhile, afflictions such as chronic fatigue syndrome and fibromyalgia debilitate many; no specific causes can be found. It is as if a growing number of people are simply becoming allergic to society itself.

So many are now taking pharmaceutical drugs (e.g. antidepressants) that they now constitute a significant pollutant. An April issue of *Science News* reported this new form of contamination of water and soil.

Thus we now see immiseration in the personal and social spheres meeting up with the impoverishment of our physical environment. A graphic suggestion that the pain and emptiness felt

by human subjects of capital and technology is connected to the ongoing destruction of nature (global warming, accelerating species extinction, oceans dying, etc.).

If the salaried thinkers of the dominant emptiness largely ignore the glaring fact of engulfing alienation, the word is definitely beginning to spread nonetheless. There is an alternative consciousness: for example, in the anti-culture of hundreds of the underground, do-it-yourself zines and pirate radio projects. And it is even showing up above ground, in films like *Matrix* and *Fight Club*, in novels like Alan Lightman's *The Diagnosis*, and in the work of Bret Easton Ellis. Critique is making itself felt in many areas.

A culture this bereft cannot long sustain itself. Especially if we are equal to the task of demolishing it in favor of life, health, freedom, authenticity.

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Industrialism and its discontents

the Luddites and their inheritors

John Zerzan

2013

Nearly two hundred years ago, Mary Wollstonecraft Shelley gave us a classic warning about the hubris of technology's combat against nature. Her late Gothic novel, *Frankenstein, or the Modern Prometheus* (1818), depicts the revenge nature takes upon the presumption of engineering life from the dead. Victor Frankenstein and his creation perish, of course; his "Adam" is as doomed as he is. If this monster cannot be saved by his father/creator, however, today's cyborg/robot/Artificial Intelligence products do expect to be saved. For those at the forefront of technological innovation today, there will be no return to a previous, monster-free state.

From our hyper-tech world we can look back to Mary Shelley's time and see the prototype, the arrival of modern techno-industrial reality. Between 1800 and 1820, England underwent the strains, storms and challenges of the ascendant Industrial Revolution. We are living with the outcome of that decisive battle-ground time.

Ugo Perone put it this way: "One day the big O with which the Ottocento [the eighteenth century] begins exploded, and philosophy as the great tale of totality started to be abandoned. The age of specializations began..."¹

Of course, few changes happen overnight. Industrial output had been tending sharply upward since the early 1780s.² And one could easily look much further back, to deforestation in Neolithic and Bronze Age times, to find out why many moors and heathlands are now barren.³ But it is in the early 19th century that power was passing from the hands of the titled landowners to those who owned the factories and foundries. Much more fundamentally, the time and space of social existence were fundamentally altered. As the equality of all citizens before the law began to emerge, so did the reality of an unprecedented subjugation or domestication.

Nothing in the canon of the (fairly recent) Enlightenment, with its claims and promises, had prepared anyone for this. The road to complete mastery of the physical and social environments was indeed opening, as the industrial system became, in Toynbee's words, "the sole dominant

¹ Ugo Perone, *The Possible Present* (Albany: State University of New York Press, 2011), p. 60.

² T.S. Ashton, *An Economic History of England: the 18th Century*, vol. 3 (London: Methuen, 1955), p. 125.

³ G.W. Dimbleby, *The Development of British Heathlands and their Soils* (Oxford: Clarendon Press, 1962), e.g. pp. 29, 44.

institution in contemporary Western life.”⁴ The picture thus presented was laden with far more pain and absence than promise.

With the nineteenth century begins the winter of the West.⁵ Spengler’s conclusion is more apt than he knew. It was not a beginning, but the beginning of the end. Dickens’ depiction of Coketown in *Hard Times* did much to capture the repercussions of industrialism: the new mass society, ruled by the regime of the factory and its pace, its polluted and despoiled landscape, its inhabitants anonymous and dehumanized. Spengler saw how “the machine works and forces the man to cooperate,” rending nature beneath him as this “Faustian” machine passion alters the face of the earth.⁶

There was a long lead-in to the pivotal developments, a long process of mechanization and privatization. In England, more than six million acres of open field and common pasture were enclosed between 1760 and 1844.⁷ The pressures of the new industrial society were increasing enormously, pushing the dispossessed relentlessly toward the despotic mills and mines. New power-driven shearing frames and fully mechanized spinning machines encroached on the relative autonomy of family-based handloom weavers, for example. By the 1820s the pace of change was dizzying.

Especially in the late 18th century, Enlightenment theories of rights were advanced as arguments against severe challenges to popular prerogatives. Although the dawn of 1789 had been a moment of great promise, the early idealism of the French Revolution was betrayed by authoritarian terror. In the first years of the 19th century, however, “the solidarity of the community [and] the extreme isolation of the authorities” were still political realities.⁸

At issue, in an unprecedented way, is a new state of being, untouched by political claims and reform efforts: a world becoming decisively independent of the individual. The quantum leap in division of labor which is industrialism means the generic interchangeability of parts — and people. From identity and particularity to the stage, in Joseph Gabel’s term, of “morbid rationalism.”⁹ Michel Foucault noted that up to the end of the 18th century, “life does not exist: only living beings.”¹⁰ The stakes were as high as they could be, the ensuing struggle a world-historical one in this first industrializing nation. It’s clear that Emile Durkheim had it entirely wrong when he proclaimed that “in the industrial societies ... social harmony comes essentially from the division of labor.”¹¹

The march of the factories was a sustained attack on irregular work routines, in favor of the time-disciplined work environment.¹² Centralized production aimed at control over recalcitrant and decentralized workers. By its nature it demanded discipline and regimentation.

⁴ Arnold J. Toynbee, *A Study of History*, vol. I (London: Oxford University Press, 1934–1958), p. 8.

⁵ Oswald Spengler, *The Decline of the West*, vol. II (New York: Alfred A. Knopf, 1928), e.g. p. 78.

⁶ *Ibid.*, p. 503.

⁷ Harold Perkin, *The Origins of Modern English Society, 1780–1880* (London: Routledge & Kegan Paul, 1969), p. 125.

⁸ E.P. Thompson, *The Making of the English Working Class* (New York: Vintage Books, 1966), p. 583.

⁹ Joseph Gabel, *False Consciousness: An Essay on Reification* (Oxford: Basil Blackwell, 1975).

¹⁰ Michel Foucault, *The Order of Things* (New York: Vintage Books, 1970), p. 161.

¹¹ Robert N. Bellah, ed., *Emile Durkheim on Morality and Society* (Chicago: University of Chicago Press, 1973), p. 86.

¹² Somewhat recent scholarship has challenged Ashton, Landes and others as having overgeneralized the irregularity of pre-industrial work habits; e.g. Mark Harrison, *Crowds and History* (New York: Cambridge University Press, 1988), ch. 5, esp. p. 111. But the overall description seems valid.

Heretofore the customary and numerous holidays from work were supplemented by the celebration of Saint Monday, a day of recovery and play following a typical weekend's drinking. Enshrined in custom and long-standing local tradition, the popular culture — especially among artisans — was independent and contemptuous of authority. Hence factory servitude did not exactly beckon. F.M.L. Thompson noted that it was “extremely difficult to find satisfactory workers,” and that “even higher wages were not enough in themselves.”¹³ For example, the reluctance of weavers (many of them women) to leave their homes has been widely documented.¹⁴

But at least as early as the beginning of the period under review, the beginnings of the destruction of the handicraft artisan and the yeoman farmer could be seen. “The small agricultural cloth-making household units... each so easily identifiable by its tenter of white cloth — would be gone in a few years,” observed Robert Reid.¹⁵ Manchester, the world's first industrial city, was one contested ground, among many other English locales, as everything was at stake and the earth was made to shift. By the late 1820s, Thomas Carlyle wrote this summary: “Were we required to characterise this age of ours by a single epithet, we should be tempted to call it, not an Heroical, Devotional, Philosophical, or Moral Age, but above all others, the Mechanical Age.”¹⁶

The widespread “hatred of authority and control”¹⁷ and “general levelling sentiment”¹⁸ meant that resistance was powerful and certainly predated the early 19th century. The Northumberland miners destroyed pit-head gear with regularity during clashes with owners, leading to the passage of no less than eight statutes directed against such destruction between 1747 and 1816: quite ineffectual statutes, evidently.¹⁹ The briefest sampling reveals the range of late 18th century contestation: the anti-toll Bristol bridge riots of 1793, the great food riot year of 1795 (when groups of women waylaid shipments of corn, and attacked government press gangs seeking to kidnap men for military service), and naval mutinies at Portsmouth and the Nore in 1797, to cite only a few prominent examples.²⁰

Machine-breaking and industrial arson soon became focused tactics against the ravages of industrialism, and to some often hard-to-pinpoint degree, against industrialism itself. Such forms of combat are seen among the west England “shearmen and clothing workers, in the Luddite resistance” to the introduction of mechanized devices between 1799 and 1803.²¹ This was also the time (1801–1802) of the underground workers' movement known as the Black Lamp, in the West Riding of Yorkshire. Not coincidentally, the 1790s was the golden age of the Lancashire handloom weavers, whose autonomy was the backbone of radical opposition to the factory system.

Marx's idea of revolution was severely limited, confined to the question of which class would rule the world of mass production. But even on those terms he completely failed to predict which groups were most likely to constitute a revolutionary force. Instead of becoming radicalized, fac-

¹³ F.M.L. Thompson, *The Cambridge Social History of Britain 1750–1950*, vol. 2 (New York: Cambridge University Press, 1990), pp. 129, 130.

¹⁴ Ashton, *op. cit.*, p. 117.

¹⁵ Robert Reid, *Land of Lost Content: the Luddite Revolt, 1812* (London: Heinemann, 1986), pp. 294–295.

¹⁶ Quoted in Ben Wilson, *Decency and Disorder: the Age of Cant 1789–1837* (London: Faber and Faber, 2007), p. 356.

¹⁷ *Ibid.*, p. 74.

¹⁸ E.P. Thompson, “The Crime of Anonymity,” in Douglas Hay et al., eds., *Albion's Fatal Tree: Crime and Society in Eighteenth-Century England* (New York: Verso, 2011), p. 277.

¹⁹ Ian R. Christie, *Stress and Stability in Late Eighteenth-Century Britain* (Oxford: Clarendon Press, 1984), pp. 150–151.

²⁰ Nicholas Rogers, *Crowds, Culture, and Politics in Georgian Britain* (Oxford: Clarendon Press, 1998), p. 229.

²¹ Thompson in Hay et al., *op. cit.*, p. 275.

tory workers were domesticated to a far greater degree than those who held out against “proletarianization.” The quiescence of factory workers is well known. It wasn’t until the 1820s that they were first drawn into protest against the progress of the industrial revolution.²²

“Class” as a social term became part of the language in the 1820s, a by-product of the rise of modern industry, according to Asa Briggs.²³ “It was between 1815 and 1820 that the working class was born,” as Harold Perkin had it,²⁴ but the distinctive consciousness did not, as noted, mean a militant, much less a radical orientation during the pivotal two decades under review. A workerist identity was “scarcely involved” in the Luddite risings between 1800 and 1820.²⁵

The most sustained Luddite destruction of newly introduced textile machinery occurred between 1811 and 1816 and took its name from Ned Ludd, a young frame-work knitter in Leicestershire who had an aversion to confinement and drudge work. More than just identification with Ned’s famous frame-smashing episode, Luddism may be properly understood as a widely-held narrative or vision.²⁶ At the heart of this shared outlook was a grounded understanding of the corrosive nature of technological progress. The focus is underlined in Robert Reid’s wonderfully-titled *Land of Lost Content*, wherein he describes a Luddite attack on the hosiery workshop of Edward Hollingsworth on the night of March 11, 1811. Having successfully breached Hollingsworth’s fortified works, frame-breaking, à la Ned, ensued. The armed workers proceeded “selectively. Only the wide machines which knitted the broader, cheaper cloth came under the destructive hammer.”²⁷ Such targeting exhibits a combative hostility to standardization and standardized, mass-produced life, hallmarks of industrial progress writ large.²⁸

Byron, the most famous poet of the age, was moved to write, “Down with all kings but King Ludd!”²⁹ More important was the very widespread support for Luddite actions. Across the area, according to E. P. Thompson, “active moral sanction [was] given by the community to all Luddite activities short of actual assassination.”³⁰ Women did not play a key role in the machine-breaking attacks, but were very much a part of the movement. In the April 1812 assault on the Burton power-loom mill in Middleton, women were conspicuously present; five were charged with riot and breaking windows.³¹

Parallel examples of militancy were the East Anglian bread riots of 1815, and the victorious five-month seamen’s strike in the same year that paralyzed coal-shipping ports and the east coast coal trade. Frame-breaking had been made a hanging offense in 1812, and repression hit its high point in 1817 with suspension of habeas corpus rights.

But upon the end of the Napoleonic wars in 1815, a long era began that was decisively centered on political reform (e.g. reform of parliamentary representation) and trade unionism. Unions,

²² Neil J. Smelser, “Sociological History,” in M.W. Flinn and T.C. Smout, eds., *Essays in Social History* (Oxford: Clarendon Press, **1874), pp. 31–32.

²³ Asa Briggs, “The Language of ‘Class’ in Early Nineteenth-Century England,” in Flinn and Smout, *op. cit.*, p. 154.

²⁴ Perkin, *op. cit.*, p. 213.

²⁵ Smelser, *op. cit.*, p. 31.

²⁶ Katrina Navickas, “The Search for ‘General Ludd’: the Mythology of Luddism,” *Social History* 30:3 (August 2005).

²⁷ Reid, *op. cit.*, pp. 59–60.

²⁸ The radical impulse in Ireland was diverted into Ribbonism, somewhat like Luddism, but lost in a nationalist emphasis. Simon Edwards “Nation and State,” in Zachary Leader and Ian Haywood, eds., *Romantic Period Writings 1798–1832: An Anthology* (New York: Routledge, 1998), p. 125.

²⁹ Kirkpatrick Sale, *Rebels Against the Future: the Luddites and their War on the Industrial Revolution* (Cambridge, MA: Perseus, 1996), p. 17.

³⁰ E.P. Thompson, *The Making of the English Working Class*, p. 585.

³¹ Rogers, *op. cit.*, p. 238.

then as now, exist to broker the relationship between owners and workers. A more or less scattered, independent and often recalcitrant population becomes combined, represented, and disciplined via unionism.³² This is much less some kind of conspiracy than an accommodation to the great pressures pushing industrial wage-slavery.

As early as Lord Holland's 1812 efforts to channel Luddite energy in a reform direction, there had been interest in somehow moving it away from its real focus. Luddism had to do with something incomparably more basic than politics and unions, but it failed in its frontal assault. A major late-inning target was John Heathcote's lace factory at Longborough in June 1816, and the Folly Hill and Pentrick risings a year later "can be regarded as the last flicker of Luddism in its desperate, violent and political phase."³³ This last adjective refers to a key aspect of the defeat of machine destruction: its diversion into reform channels.

Oppositional energies could still be found, but from this point on they were more often in evidence in more approved contexts. In Bristol, for example, "gangs of disorderly fellows there assembled, throwing stinking fish, dead cats, dogs, rats, and other offensive missiles" during an election campaign.³⁴ The "Swing" riots throughout southeast England in 1830–1831 harkened back to anti-industrial militancy. Agricultural laborers resented threshing machines that were turning farms into factories; they resorted to destroying them and burning owners' property.³⁵ Their direct action and communal organization marked them as agricultural Luddites. Another, and pretty much final outbreak was the Plug riots in the summer of 1842, when a thousand armed workers held Manchester for several days in a general strike. But the second and third generation came to accept as natural the confinement and deskilling of industrial labor. Only starvation could conquer a few holdouts, notably handloom weavers, terribly outflanked by the factories. What happened, or failed to happen, in the turning point years of 1800 to 1820 sealed people's fate. The ultimate victor was a new, much deeper level of domestication.

The Luddite challenge to the new order stood out, and continues to inspire. Another, somewhat neglected aspect or current was that of religious utopianism, known as millenarianism. This movement (or movements) shed virtually all association with traditional religious belief. It was distant from that agent of social control, the Church of England, and turned its back(s) on the C of E's main rival, Methodism (aka Dissenting or Non-Conformist). The millennials were anti-clerical and even at times anti-Christian.³⁶ They promised a vast transformation; their prophets threatened to "turn the world upside down," similar to the aims of secular revolutionaries.³⁷ Millenarianism was "directed to the destruction of existing society," and the reigning authorities believed in the possibility that it "might be sufficient to spark off the explosive mixture of social discontent and radical sentiment" then prevailing.³⁸

³² For the conservative role of unions see John Zerzan, "Who Killed Ned Ludd?" in John Zerzan, *Elements of Refusal* (Columbia, MO: C.A.L. Press, 1999), pp. 205–211.

³³ Edward Royle, *Revolutionary Britannia?: Reflections on the Threat of Revolution in Britain, 1789–1848* (Manchester: Manchester University Press, 2000), p. 51.

³⁴ M. Harrison, *op. cit.*, p. 179.

³⁵ Roland Quinault, "The Industrial Revolution and Parliamentary Reform," in Patrick K. O'Brien and Roland Quinault, eds., *The Industrial Revolution and British Society* (New York: Cambridge University Press, 1993), p. 197.

³⁶ J.F.C. Harrison, *The Second Coming: Popular Millenarianism 1780–1850* (New Brunswick, NJ: Rutgers University Press, 1979), p. 10.

³⁷ Iain McCalman, *Radical Underworld* (New York: Cambridge University Press, 1988), p. 61.

³⁸ J.F.C. Harrison, *op. cit.*, pp. 50, 77.

The Methodist leadership recoiled in horror from the Luddite momentum and likewise from the many faces of millenarian extremism, some number of which were breakaways from Methodism. The Primitive Methodist Connexion was steadily growing, along with the “magic Methodists” of Delamere Forest, and the “Kirkgate screamers” of Leeds, among the many disaffected offshoots.³⁹ Some of these (and other similar groups) were explicitly referred to as Ranters, recognizing a link to the Ranters (and Diggers) of the 17th century millenarianist rebellion. Already in the 1790s “cheap reprints of long-buried works of Ranter and Antinomian [literally, anti-law] complexion” were circulating.⁴⁰

The Scottish Buchanites, followers of Elspeth Simpson Buchan, wished to hold all things in common and rejected the bonds of official marriage. The Wroeites were largely wool-combers and handloom weavers, fighting against the extinction of their crafts. The more numerous Muggletonians, led by the tailor Ludovic Muggle, offered a refuge to the oppressed and excluded. Among the myriad groups and sects a range of millennial faiths can be found. Joanna Southcott, with her thousands of Southcottians, was a feminist—but not a radical one. Some of her flock, like Peter Morison and John Ward, were on the fiery side; in 1806 Morison preached the confiscation of “all the property and land belonging to the rich.”⁴¹ Richard Brothers of the New Jerusalem proclaimed that “now is the whore of Babylon falling” and the future will see “no more war, no more want.”⁴² Robert Wedderburn, a black sailor, attracted the “most extreme and impoverished radicals” to his London chapel.⁴³

The millenarian impulse was by no means an isolated, cranky, or unrepresentative passion. In the 1790s it emerged “on a scale unknown since the 17th century,” judged E.P. Thompson.⁴⁴ “From the 1790s to at least the 1830s radical millenarianism could pose a real threat” to the dominant system, precisely because it did not accept the ruling paradigm or participate within it.⁴⁵ It was an active critique of the deep assumptions of the ruling order.

Domestic servants and small shopkeepers were among the adherents, as well as artisans and other dispossessed craftspeople who were the spearhead of the Luddite ranks. And in 1813 a New Connexion minister, George Beaumont, was charged with inspiring the Luddite attacks in the Huddersfield area.

Thomas Spence was an influential, apocalyptic figure who found inspiration in the 17th century visionaries. He reprinted a Digger tract from that era by Gerald Winstanley, and likewise attacked private property as standing against God’s common storehouse. Spence was convinced that “God was a very notorious Leveller” and that it was possible and necessary for humble men to turn the world upside down.⁴⁶

³⁹ Eric J. Evans, *The Forging of the Modern State: Early Industrial Britain, 1783–1870* (New York: Longman, 1983), p. 53.

⁴⁰ Iain McCalman, “New Jerusalem: Prophecy, Dissent and Radical Culture in England, 1786– 1830,” in Knud Haakonsen, ed., *Enlightenment and Religion: Rational Dissent in Eighteenth Century Britain* (New York: Cambridge University Press, 1996), p. 324.

⁴¹ J.F.C. Harrison, *op. cit.*, p. 127.

⁴² Quoted in E.P. Thompson, *The Making of the English Working Class*, *op. cit.*, p. 118.

⁴³ I. McCalman, *op. cit.*, p. 139.

⁴⁴ E.P. Thompson, *Making*, *op. cit.*, p. 116.

⁴⁵ E. Royle, *op. cit.*, p. 45.

⁴⁶ I. McCalman, *op. cit.*, p. 63.

Alas, the world wasn't turned upside down. The civilizing machine persevered through the storms. Religion, in its usual role, taught respect for authority and had a new weapon in its arsenal: the evangelical revival's campaign for industrial discipline.

William Blake, of "dark Satanic mills" fame, was an enigmatic, idiosyncratic figure who certainly played a part in this period. Not fully a millenarian or a Romantic either, Blake took as his central theme "the need to release the human spirit from bondage."⁴⁷ Starting from an orientation toward class struggle, Blake ultimately opposed kingship, and rulership itself.⁴⁸

His *Songs of Experience* (1790s) point in a radical and millenarian direction, and he provided a radical critique of the limits of Swedenborgianism. But Blake can be characterized more as a Jacobin reformer than a revolutionary millennial. Consistency may be hard to find overall, though some observations, rendered in his own inimitable style, hit the mark. He found the factory and the workhouse terribly wrong and, as with the Luddites, saw the destruction of traditional workmanship as the end of working people's integrity. Mechanized time was a particularly important target: "the hours of folly are measured by the clock, but of wisdom: no clock can measure," for example.⁴⁹

Blake's outlook on both nature and women has to be seen as quite flawed. His anti-feminism is hard to miss, and there is a contempt for nature, as female and therefore secondary to the male. Social harmony is a major goal, but harmony or balance with nature, as championed by the Romantics or William Morris, for instance, was of no interest to Blake.⁵⁰ He desired the "Immediate by Perception or Sense at once,"⁵¹ but it did not occur to him to ground this desire in the non-symbolic natural world.

E.P. Thompson clearly went too far in asserting, "Never, on any page of Blake, is there the least complicity with the kingdom of the Beast."⁵² More accurate was his appraisal that few "delivered such shrewd and accurate blows against the ideological defenses of their society."⁵³

The first two decades of the 19th century were the heart of the Romantic period, and the course of this literary movement reflects what took place socially and politically in those years. At the beginning, Coleridge, Wordsworth, Shelley and others gave voice to "an explosion of millenarian and apocalyptic enthusiasm for the new dawn."⁵⁴ Writing in 1804, Wordsworth recalled the exhilaration of ten years or so earlier, when the French revolution announced a new world and the factory system had not yet metastasized: "Bliss was it in that dawn to be alive,/But to be young was very Heaven!"⁵⁵ In its first bloom especially, Romanticism sought to reconcile humans and nature, consciousness and unconsciousness. As Northrup Frye put it, "the contrast between the

⁴⁷ Shiv Kumar, "The New Jerusalem of William Blake," in Shiv Kumar, ed., *British Romantic Poets* (New York: New York University Press, 1966), p. 169.

⁴⁸ Michael Ferber, *The Social Vision of William Blake* (Princeton: Princeton University Press, 1985), pp. 191–192.

⁴⁹ Quoted in *Ibid.*, p. 135.

⁵⁰ *Ibid.*, pp. 83, 86, 99, 105.

⁵¹ Quoted in Heather Glen, *Blake's Songs and Wordsworth's Lyrical Ballads* (New York: Cambridge University Press, 1983), p. 206.

⁵² E.P. Thompson, *Witness against the Beast: William Blake and the Moral Law* (New York: Cambridge University Press, 1983), p. 229.

⁵³ *Ibid.*, p. 114.

⁵⁴ Carl Woodring, *Politics in English Romantic Poetry* (Cambridge, MA: Harvard University Press, 1970), p. 47.

⁵⁵ Quoted in R.W. Harris, *Romanticism and the Social Order* (London: Blandford Press, 1969), p. 178.

mechanical and the organic is deeply rooted in Romantic thinking.”⁵⁶ Rene Wellek noted that such thinking could be seen as “an upsurge of the unconscious and the primitive.”⁵⁷

Events, soon to be defined by Marx and other industrializers as Progress, undid optimism and a sense of possibilities, as we have seen. Sunny Enlightenment predictions about the perfectibility of society were already turning to ashes, as people became increasingly separated from nature and entered the state of modern, industrial slavery. A great sense of disappointment overtook the earlier aspirations, which were rapidly being destroyed by each new advance of industrial capitalism. From this point onward, disillusionment, ennui, and boredom became central to life in the West.

William Wordsworth acknowledged the existence and importance of a spirit of wild nature, which Blake resisted in him. Wordsworth was particularly moved by the decline of the domestic or pre-industrial mode of production and its negative impact on the poor and on families.⁵⁸ Privation, a sense of what has been lost, is a key theme in Wordsworth. His well-known decline as a poet after 1807 seems linked to the pessimism, even despair, that began to get the upper hand. He saw that the Enlightenment enshrining of Reason had failed, and he abandoned Nature as a source of value or hope.

Samuel Taylor Coleridge’s anguish at the erosion of community brought surrender and drug addiction. His *Rime of the Ancient Mariner* testifies to the erosion of values in the absence of community. His “Michael” poems completed a series on abandonment and meaningless loss. A major poet who collapsed back into Anglican orthodoxy — as did Wordsworth — and nationalist conservatism.

One who kept the liberatory Romantic flame burning longer was Percy Bysshe Shelley. Influenced by the anarchist William Godwin, Shelley’s *Queen Mab* (1813) contains these lines:

Power, like a desolating pestilence,
Pollutes whate’er it touches; and obedience,
Bane of all genius, virtue, freedom, truth,
Makes slaves of men, and, of the human frame,
A mechanized automaton. *(III, 176)⁵⁹

Shelley’s *Mask of Anarchy* (1819) is an angry call to arms following the government assault on protestors, known as the Peterloo Massacre (e.g. “Rise like Lions after slumber/In unvanquishable number”).⁶⁰ But he too flamed out, lost his way. The Hyperion project was dropped, and a major work, *Prometheus Unbound*, presents a confusing picture. By 1820 his passion had been quelled.

Of aristocratic lineage, George Gordon, Lord Byron was a lifelong radical. He spoke out against making frame-breaking a capital offense, and defended the impoverished. His brazen, bisexual behavior shocked a society he despised. With *Childe Harold* and *Don Juan*, transgressors escaped their “just desserts” and instead were glamorized. Byron saw nature as a value in itself; his nature poetry is correspondingly instinctive and immediate (as is that of his contemporary, John Keats).

⁵⁶ Northrup Frye, “The Drunken Boat,” in Northrup Frye, ed., *Romanticism Reconsidered* (New York: Columbia University Press, 1963), p. 7.

⁵⁷ René Wellek, “Romanticism Reconsidered,” in Frye, *op. cit.*, p. 117.

⁵⁸ R.W. Harris, *op. cit.*, p. 193.

⁵⁹ Quoted in *Ibid.*, p. 288.

⁶⁰ Quoted in *Ibid.*, p. 299

He was the most famous of living Englishmen but said goodbye to England in 1816, first to join forces with Carbonari partisans in Italy, and later on the side of Greek rebels, among whom he died in 1824. "I have simplified my politics into an utter detestation of all existing governments," he had declared.⁶¹

Dino Falluga recognized that some celebrated the death of Byron and what he represented. Victorian novelist Edward Bulwer-Lytton wrote a few decades after the fact that thanks to Byron's death the culture was finally able to grow up. It "becomes accustomed to the Mill," rather than quixotically defending the Luddites as Byron did.⁶² Expectations of change did indeed die with Byron, if not before. Frustration with individual disappointments, also with a generalized, now chronic condition. Now the solitary poet becomes a true fixture, true to the reality that the poet — and not only the poet — is losing the last resource, one's own authority over oneself. Another deep loss of this era, perhaps the deepest. The age of no more autonomy, of no more hope of making things basically different.

The Gothic novel represents the dark side of Romanticism. It had been launched decades earlier, with Horace Walpole's anti-Enlightenment *The Castle of Otranto* (1764), and outlived Romanticism considerably. Its rise suggests resistance to the ideas of progress and development. The more psychoanalytically inclined see the Gothic as a return of what had been repressed: "a rebellion against a constraining neoclassical aesthetic ideal of order and unity, in order to recover a suppressed primitive and barbaric imaginative freedom."⁶³

A common feature of many Gothic novels is a look backward to a simpler and more harmonious world — a connection to Rousseauian primitivism. Gothic's revolt against the new mechanistic model for society often idealizes the medieval world (hence the Gothic) as one of organic wholeness. But this rather golden past could hardly be recognized through the distorting terror of the intervening years. Gothic ruins and haunted houses in print reflected the production of real ruins, real nightmares. The trauma of fully Enlightened modernity finds its echo in inhuman literary settings where the self is hopelessly lost and ultimately destroyed. The depravity of Matthew Lewis' *The Monk*, hailed by the Marquis de Sade, comes to mind, as does Mary Shelley's *Frankenstein*, which demonizes its own creation. Soon, however, the Gothic became as mechanistic a genre as the social order it rejected. Its formulaic products are still being churned out.

The formation of malleable character, adaptable to the regimen of industrial life, was of obvious importance to the various managers in the early 19th century. Hence a key argument for support of schools was that they were "a form of social insurance."⁶⁴ In Eric Evans' summary, "By 1815 the argument was not whether education for the lower orders was proper but how much should be provided."⁶⁵

The dinnerware manufacturer Thomas Wedgwood wanted a rigorous, disciplinary system of education and tried to enlist Wordsworth as its superintendent. His response, in *The Prelude*, includes these stinging lines:

⁶¹ Quoted in *Ibid.*, p. 361.

⁶² Dino Franco Falluga, *The Perversity of Poetry: Ideology and the Popular Male Poet of Genius* (Albany: State University of New York Press, 2004), p. 133.

⁶³ Maggie Kilgour, *The Rise of the Gothic Novel* (New York: Routledge, 1995), p. 3.

⁶⁴ A.P. Wadsworth, "The First Manchester Sunday Schools," in Flinn and Smout, *op. cit.*, p. 101.

⁶⁵ E. Evans, *op. cit.*, p. 54.

The Guides, the Wardens of our faculties,
And Stewards of our labor, watchful men
And skillful in the usury of time,
Sages, who in their prescience would controul
All accidents and to the very road
Which they have fashion'd would confine us down,
Like engines⁶⁶

Private, usually Christian schools received some government funding, but a national system of education was rather slow in arriving.

Food rioters, anti-enclosure fence-breakers, not to mention Luddites, could end up on the gallows, but a modern uniformed police force was not implemented much earlier than was a standardized school system. While those in authority had great need of law enforcement, they faced the deep-rooted hostility of the majority. Prevailing sentiment held that personal morality should not be subject to scrutiny by the armed force of society and law. Police were opposed as “paid agents of the state who informed on their neighbors and interfered in private life.”⁶⁷

Uniformed police were on the streets of London with passage of the Metropolitan Police Act of 1829, but strong antipathy to the new institution persisted. At a political reform rally in Coldbath Fields, London in 1833 a struggle broke out and three officers were stabbed, one fatally. The subsequent coroner’s jury brought in a verdict of justifiable homicide.

The change toward formal policing was just one aspect of an enforced social shift already underway. Increased control of mores introduced laws against “public indecency,” and other punitive measures were enshrined in the Vagrant Act of 1822. This was part of the transition from “a largely communal to a primarily state-oriented, bureaucratically organized and professionally supported civic culture,” in the words of M.J.D. Roberts.⁶⁸ Idleness was a mark against the overall industrial future, so the treadmill was introduced. (Idleness among the rich was quite different, needless to say.) Unauthorized fairs were subject to suppression, though they showed considerable staying power; the Vagrant Act of 1824 was aimed at a variety of popular entertainments. The outlawing of “blood sports” like cock-fighting and bull-baiting may be seen as a positive move; but there was no talk of banning hunting of fox, rabbit, and deer by the upper crust.

Driven by the enclosure movement at base, privatization struck on all levels. Domesticity tended to crowd out the social, and happiness became “a fireside thing.”⁶⁹ Enclosure meant an absolutization of private property; enjoyment was increasingly private and confined. The home itself becomes more specifically divided, isolating family members within the household.⁷⁰ Movement is toward segregation of the sexes and identification of women with domesticity. The family and its division of labor become integrated with the trajectory of industry.

Consumer demand for cheap manufactured goods was an underlying, emergent key to the Industrial Revolution. This “demand” was not exactly spontaneous; new wants were now very widely advertised and promoted, filling the vacuum of what had been taken away. The decline

⁶⁶ E.P. Thompson, “Time, Work-Discipline, and Industrial Capitalism,” *Past and Present* 38:1 (1967), p. 97.

⁶⁷ B. Wilson, *op. cit.*, p. 261.

⁶⁸ M.J.D. Roberts, “Public and Private in Early Nineteenth Century London: the Vagrant Act of 1822 and its Enforcement,” *Social History* 13:3 (October 1988), p. 294.

⁶⁹ Robert W. Malcomson, *Popular Recreations in English Society, 1700–1850* (Cambridge: Cambridge University Press, 1973), p. 156.

⁷⁰ Jurgen Habermas, *The Structural Transformation of the Public Sphere* (Cambridge MA: MIT Press, 1989), p. 45.

in traditional self-sufficiency was everywhere apparent; beer and bread were now more often bought than brewed and baked at home, for example. Standardized goods — and a standardized national language — were in full flow.⁷¹

A stronger emphasis on the need for regular, predictable labor is shown by the prevalence of factory clocks, schedules, and timetables; also domestic clocks and personal watches, once luxury items and now consumer necessities. By the 1820s, nostalgic images were being reproduced using the kinds of technology that erased the lost, commemorated world.⁷² As a relatively self-sustaining arrangement of life, rural society was ending, fast becoming a commercial item to be wistfully contemplated.

Bulwer-Lytton wrote in 1833 of the ascendant standards of decorum and conformity: “The English of the present day are not the English of twenty years ago.”⁷³ Diversions that many had enjoyed throughout their lives — public drinking, many holidays from work, boisterous street fairs, etc. — were seen as disgraceful and disgusting under the new order.

As the average person was being subdued and tamed, a few were lionized. Industrial modernity ushered in what is so prominent today, celebrity culture. The flamboyant actor Thomas Kean was an early star, but none surpassed the fame of Byron. He was one of the first ever to receive what we would call fan mail, that is, unsolicited letters on a mass scale.⁷⁴ Massified life also initiated widespread psychic immiseration. The best-seller of 1806 was *The Miseries of Human Life*, testifying to the large-scale anxiety and depression that had already set in, inevitable fruit of modern subjugation.

The door that was forced open decisively between 1800 and 1820, roughly speaking (and I do mean roughly), inaugurated both global warming and an ever-mounting rise in global population. Globalizing industrialization is the motive force behind both developments. A deepening technological dimension becomes more and more immersive and defining, driving the loss of meaning, passion, and connection. This trajectory continually reaches new levels, at an ever-accelerating rate. As early as the 1950s, new technology was hailed by many as a “Second Industrial Revolution.”⁷⁵ In 1960 Clark Kerr and others announced that “the world is entering a new age — the age of total industrialization.”⁷⁶

As the 19th century waned, William Morris, who disliked all machinery, concluded that “Apart from the desire to produce beautiful things, the leading passion of my life has been and is hatred of modern civilization.”⁷⁷ His *News from Nowhere* expresses a wonderful reversal of perspective, in which Ellen speaks from a time that has set aside the techno-desolation: “And even now, when all is won and has been for a long time, my heart is sickened with thinking of all the waste of life that has gone on for so many years.” “So many centuries, she said, so many ages.”⁷⁸

⁷¹ Fiona Stafford, *Local Attachments: the Province of Poetry* (New York: Oxford University Press, 2010), pp. 84–85.

⁷² David Bindman, “Prints,” in I. McCalman, *op. cit.*, p. 209.

⁷³ Quoted in B. Wilson, *op. cit.*, p. 316.

⁷⁴ Tom Mole, *Romanticism and Celebrity* (New York: Cambridge University Press, 2009), p. 228.

⁷⁵ For example, Norbert Weiner, *The Human Use of Human Beings* (London: Eyre and Spottiswoode, 1954).

⁷⁶ Clark Kerr et al, *Industrialism and Industrial Man* (Cambridge MA: Harvard University Press, 1960), p. 1.

⁷⁷ Quoted in E.P. Thompson, *William Morris: Romantic to Revolutionary* (New York, Pantheon Books, 1977), p. 125.

⁷⁸ William Morris, *News from Nowhere* (New York: Routledge, 1970), p. 176.

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Language: Origin and Meaning

John Zerzan

Fairly recent anthropology (e.g. Sahlins, R.B. Lee) has virtually obliterated the long-dominant conception which defined prehistoric humanity in terms of scarcity and brutalization. As if the implications of this are already becoming widely understood, there seems to be a growing sense of that vast epoch as one of wholeness and grace. Our time on earth, characterized by the very opposite of those qualities, is in the deepest need of a reversal of the dialectic that stripped that wholeness from our life as a species.

Being alive in nature, before our abstraction from it, must have involved a perception and contact that we can scarcely comprehend from our levels of anguish and alienation. The communication with all of existence must have been an exquisite play of all the senses, reflecting the numberless, nameless varieties of pleasure and emotion once accessible within us.

To Levy-Bruhl, Durkheim and others, the cardinal and qualitative difference between the “primitive mind” and ours is the primitive’s lack of detachment in the moment of experience; “the savage mind totalizes,” as Levi-Strauss put it. Of course we have long been instructed that this original unity was destined to crumble, that alienation is the province of being human: consciousness depends on it.

In much the same sense that objectified time has been held to be essential to consciousness—Hegel called it “the necessary alienation”—so has language, and equally falsely. Language may be properly considered the fundamental ideology, perhaps as deep a separation from the natural world as self-existent time. And if timelessness resolves the split between spontaneity and consciousness, languagelessness may be equally necessary.

Adorno, in *Minima Moralia*, wrote: “To happiness the same applies as to truth: one does not have it, but is in it.” This could stand as an excellent description of humankind as we existed before the emergence of time and language, before the division and distancing that exhausted authenticity.

Language is the subject of this exploration, understood in its virulent sense. A fragment from Nietzsche introduces its central perspective: “words dilute and brutalize; words depersonalize; words make the uncommon common.”

Although language can still be described by scholars in such phrases as “the most significant and colossal work that the human spirit has evolved,” this characterization occurs now in a context of extremity in which we are forced to call the aggregate of the work of the “human spirit” into question. Similarly, if in Coward and Ellis’ estimation, the most “significant feature of

twentieth-century intellectual development” has been the light shed by linguistics upon social reality, this focus hints at how fundamental our scrutiny must yet become in order to comprehend maimed modern life. It may sound positivist to assert that language must somehow embody all the “advances” of society, but in civilization it seems that all meaning is ultimately linguistic; the question of the meaning of language, considered in its totality, has become the unavoidable next step.

Earlier writers could define consciousness in a facile way as that which can be verbalized, or even argue that wordless thought is impossible (despite the counter-examples of chessplaying or composing music). But in our present straits, we have to consider anew the meaning of the birth and character of language rather than assume it to be merely a neutral, if not benign, inevitable presence. The philosophers are now forced to recognize the question with intensified interest; Gadamer, for example: “Admittedly, the nature of language is one of the most mysterious questions that exists for man to ponder on.”

Ideology, alienation’s armored way of seeing, is a domination embedded in systematic false consciousness. It is easier still to begin to locate language in these terms if one takes up another definition common to both ideology and language: namely, that each is a system of distorted communication between two poles and predicated upon symbolization.

Like ideology, language creates false separations and objectifications through its symbolizing power. This falsification is made possible by concealing, and ultimately vitiating, the participation of the subject in the physical world. Modern languages, for example, employ the word “mind” to describe a thing dwelling independently in our bodies, as compared with the Sanskrit word, which means “working within,” involving an active embrace of sensation, perception, and cognition. The logic of ideology, from active to passive, from unity to separation, is similarly reflected in the decay of the verb form in general. It is noteworthy that the much freer and sensuous hunter-gatherer cultures gave way to the Neolithic imposition of civilization, work and property at the same time that verbs declined to approximately half of all words of a language; in modern English, verbs account for less than 10% of words.

Though language, in its definitive features, seems to be complete from its inception, its progress is marked by a steadily debasing process. The carving up of nature, its reduction into concepts and equivalences, occurs along lines laid down by the patterns of language. And the more the machinery of language, again paralleling ideology, subjects existence to itself, the more blind its role in reproducing a society of subjugation.

Navajo has been termed an “excessively literal” language, from the characteristic bias of our time for the more general and abstract. In a much earlier time, we are reminded, the direct and concrete held sway; there existed a “plethora of terms for the touched and seen.” (Mellersh 1960) Toynbee noted the “amazing wealth of inflexions” in early languages and the later tendency toward simplification of language through the abandonment of inflexions. Cassirer saw the “astounding variety of terms for a particular action” among American Indian tribes and understood that such terms bear to each other a relation of juxtaposition rather than of subordination. But it is worth repeating once more that while very early on a sumptuous prodigality of symbols obtained, it was a closure of symbols, of abstract conventions, even at that stage, which might be thought of as adolescent ideology.

Considered as the paradigm of ideology, language must also be recognized as the determinant organizer of cognition. As the pioneer linguist Sapir noted, humans are very much at the mercy of language concerning what constitutes “social reality.” Another seminal anthropological linguist,

Whorf, took this further to propose that language determines one's entire way of life, including one's thinking and all other forms of mental activity. To use language is to limit oneself to the modes of perception already inherent in that language. The fact that language is only form and yet molds everything goes to the core of what ideology is.

It is reality revealed only ideologically, as a stratum separate from us. In this way language creates, and debases the world. "Human speech conceals far more than it confides; it blurs much more than it defines; it distances more than it connects," was George Steiner's conclusion.

More concretely, the essence of learning a language is learning a system, a model, that shapes and controls speaking. It is easier still to see ideology on this level, where due to the essential arbitrariness of the phonological, syntactic, and semantic rules of each, every human language must be learned. The unnatural is imposed, as a necessary moment of reproducing an unnatural world.

Even in the most primitive languages, words rarely bear a recognizable similarity to what they denote; they are purely conventional. Of course this is part of the tendency to see reality symbolically, which Cioran referred to as the "sticky symbolic net" of language, an infinite regression which cuts us off from the world. The arbitrary, self-contained nature of language's symbolic creates growing areas of false certainty where wonder, multiplicity and non-equivalence should prevail. Barthes' depiction of language as "absolutely terrorist" is much to the point here; he saw that its systematic nature "in order to be complete needs only to be valid, and not to be true." Language effects the original split between wisdom and method.

Along these lines, in terms of structure, it is evident that "freedom of speech" does not exist; grammar is the invisible "thought control" of our invisible prison. With language we have already accommodated ourselves to a world of unfreedom.

Reification, the tendency to take the conceptual as the perceived and to treat concepts as tangible, is as basic to language as it is to ideology. Language represents the mind's reification of its experience, that is, an analysis into parts which, as concepts, can be manipulated as if they were objects. Horkheimer pointed out that ideology consists more in what people are like—their mental constrictedness, their complete dependence on associations provided for them—than in what they believe. In a statement that seems as pertinent to language as to ideology, he added that people experience everything only within the conventional framework of concepts.

It has been asserted that reification is necessary to mental functioning, that the formation of concepts which can themselves be mistaken for living properties and relationships does away with the otherwise almost intolerable experience of relating one experience to another.

Cassirer said of this distancing from experience, "Physical reality seems to reduce in proportion as man's symbolic activity advances." Representation and uniformity begin with language, reminding us of Heidegger's insistence that something extraordinarily important has been forgotten by civilization.

Civilization is often thought of not as a forgetting but as a remembering, wherein language enables accumulated knowledge to be transmitted forward, allowing us to profit from other's experiences as though they were our own. Perhaps what is forgotten is simply that other's experiences are *not* our own, that the civilizing process is thus a vicarious and inauthentic one. When language, for good reason, is held to be virtually coterminous with life, we are dealing with another way of saying that life has moved progressively farther from directly lived experience.

Language, like ideology, mediates the here and now, attacking direct, spontaneous connections. A descriptive example was provided by a mother objecting to the pressure to learn to read: "Once

a child is literate, there is no turning back. Walk through an art museum. Watch the literate students read the title cards before viewing the paintings to be sure that they know what to see. Or watch them read the cards and ignore the paintings entirely...As the primers point out, reading opens doors. But once those doors are open, it is very difficult to see the world without looking through them."

The process of transforming all direct experience into the supreme symbolic expression, language, monopolizes life. Like ideology, language conceals and justifies, compelling us to suspend our doubts about its claim to validity. It is at the root of civilization, the dynamic code of civilization's alienated nature. As the paradigm of ideology, language stands behind all of the massive legitimization necessary to hold civilization together. It remains for us to clarify what forms of nascent domination engendered this justification, made language necessary as a basic means of repression.

It should be clear, first of all, that the arbitrary and decisive association of a particular sound with a particular thing is hardly inevitable or accidental. Language is an invention for the reason that cognitive processes must precede their expression in language. To assert that humanity is only human because of language generally neglects the corollary that being human is the precondition of inventing language.

The question is how did words first come to be accepted as signs at all? How did the first symbol originate? Contemporary linguists find this "such a serious problem that one may despair of finding a way out of its difficulties." Among the more than ten thousand works on the origin of language, even the most recent admit that the theoretical discrepancies are staggering. The question of when language began has also brought forth extremely diverse opinions. There is no cultural phenomenon that is more momentous, but no other development offers fewer facts as to its beginnings. Not surprisingly, Bernard Campell is far from alone in his judgment that "We simply do not know, and never will, how or when language began."

Many of the theories that have been put forth as to the origin of language are trivial: they explain nothing about the qualitative, intentional changes introduced by language. The "ding-dong" theory maintains that there is somehow an innate connection between sound and meaning; the "pooh-pooh" theory holds that language at first consisted of ejaculations of surprise, fear, pleasure, pain, etc.; the "ta-ta" theory posits the imitation of bodily movements as the genesis of language, and so on among explanations that only beg the question. The hypothesis that the requirements of hunting made language necessary, on the other hand, is easily refuted; animals hunt together without language, and it is often necessary for humans to remain silent in order to hunt.

Somewhat closer to the mark, I believe, is the approach of contemporary linguist E.H. Sturtevant: since all intentions and emotions are involuntarily expressed by gesture, look, or sound, voluntary communication, such as language, must have been invented for the purpose of lying or deceiving. In a more circumspect vein, the philosopher Caws insisted that "truth...is a comparative latecomer on the linguistic scene, and it is certainly a mistake to suppose that language was invented for the purpose of telling it."

But it is in the specific social context of our exploration, the terms and choices of concrete activities and relationships, that more understanding of the genesis of language must be sought. Olivia Vlahos judged that the "power of words" must have appeared very early; "Surely...not long after man had begun to fashion tools shaped to a special pattern." The flaking or chipping of stone

tools, during the million or two years of Paleolithic life, however, seems much more apt to have been shared by direct, intimate demonstration than by spoken directions.

Nevertheless, the proposition that language arose with the beginnings of technology—that is, in the sense of division of labor and its concomitants, such as a standardizing of things and events and the effective power of specialists over others—is at the heart of the matter, in my view. It would seem very difficult to disengage the division of labor—“the source of civilization,” in Durkheim’s phrase—from language at any stage, perhaps least of all the beginning. Division of labor necessitates a relatively complex control of group action; in effect it demands that the whole community be organized and directed. This happens through the breakdown of functions previously performed by everybody, into a progressively greater differentiation of tasks, and hence of roles and distinctions.

Whereas Vlahos felt that speech arose quite early, in relation to simple stone tools and their reproduction, Julian Jaynes has raised perhaps a more interesting question which is assumed in his contrary opinion that language showed up much later. He asks, how it is, if humanity had speech had for a couple of million years, that there was virtually no development of technology? Jaynes’s question implies a utilitarian value inhering in language, a supposed release of latent potentialities of a positive nature. But given the destructive dynamic of the division of labor, referred to above, it may be that while language and technology are indeed linked, they were both successfully resisted for thousands of generations.

At its origins language had to meet the requirements of a problem that existed outside language. In light of the congruence of language and ideology, it is also evident that as soon as a human spoke, he or she was separated. This rupture is the moment of dissolution of the original unity between humanity and nature; it coincides with the initiation of division of labor. Marx recognized that the rise of ideological consciousness was established by the division of labor; language was him the primary paradigm of “productive labor.” Every step in the advancement of civilization has meant added labor, however, and the fundamentally alien reality of productive labor/work is realized and advanced via language. Ideology receives its substance from division of labor, and, inseparably, its form from language.

Engels, valorizing labor even more explicitly than Marx, explained the origin of language from and with labor, the “mastery of nature.” He expressed the essential connection by the phrase, “first labor, after it and then with it speech.” To put it more critically, the artificial communication which is language was and is the voice of the artificial separation which is (division of) labor. (In the usual, repressive parlance, this is phrased positively, of course, in terms of the invaluable nature of language in organizing “individual responsibilities.”)

Language was elaborated for the suppression of feelings; as the code of civilization it expresses the sublimation of Eros, the repression of instinct, which is the core of civilization. Freud, in the one paragraph he devoted to the origin of language, connected original speech to sexual bonding as the instrumentality by which work was made acceptable as “an equivalence and substitute for sexual activity.” This transference from a free sexuality to work is original sublimation, and Freud saw language constituted in the establishing of the link between mating calls and work processes.

The neo-Freudian Lacan carries this analysis further, asserting that the unconscious is formed by the primary repression of acquisition of language. For Lacan the unconscious is thus “structured like a language” and functions linguistically, not instinctively or symbolically in the traditional Freudian sense.

To look at the problem of origin on a figurative plane, it is interesting to consider the myth of the Tower of Babel. The story of the confounding of language, like that other story in Genesis, the Fall from the grace of the Garden, is an attempt to come to terms with the origin of evil. The splintering of an “original language” into mutually unintelligible may best be understood as the emergence of symbolic language, the eclipse of an earlier state of more total and authentic communication. In numerous traditions of paradise, for example, animals can talk and humans can understand them.

I have argued elsewhere that the Fall can be understood as a fall into time. Likewise the failure of the Tower of Babel suggests, as Russell Fraser put it, “the isolation of man in historical time.” But the Fall also has a meaning in terms of the origin of language. Benjamin found it in the mediation which is language and the “origin of abstraction, too, as a faculty of language-mind.” “The fall is into language,” according to Norman O. Brown.

Another part of Genesis provides Biblical commentary on an essential of language, names, and on the notion that naming is an act of domination. I refer to the creation myth, which includes “and whatsoever Adam called every living creature, that was the name thereof.” This bears directly on the necessary linguistic component of the domination of nature: man became master of things only because he first named them, in the formulation of Dufrenne. As Spengler had it, “To name anything by a name is to win power over it.”

The beginning of humankind’s separation from and conquest of the world is thus located in the naming of the world. *Logos* itself as god is involved in the first naming, which represents the domination of the deity. The well-known passage is contained in the Gospel of John: “In the beginning was the Word, and the Word was with God, and the Word was God.”

Returning to the question of the origin of language in real terms, we also come back to the notion that the problem of language is the problem of civilization. The anthropologist Lizot noted that the hunter-gatherer mode exhibited that lack of technology and division of labor that Jaynes felt must have bespoken an absence of language; “(Primitive people’s) contempt for work and their disinterest in technological progress per se are beyond question.” Furthermore, “the bulk of recent studies,” in Lee’s words of 1981, shows the hunter-gatherers to have been “well nourished and to have (had) abundant leisure time.”

Early humanity was not deterred from language by the pressures of constant worries about survival; the time for reflection and linguistic development was available but this path was apparently refused for many thousands of years. Nor did the conclusive victory of agriculture, civilization’s cornerstone, take place (in the form of the Neolithic revolution) because of food shortages or population pressures. In fact, as Lewis Binford has concluded, “The question to be asked is not why agriculture and food-storage techniques were not developed everywhere, but why they were developed at all.”

The dominance of agriculture, including property ownership, law, cities, mathematics, surplus, permanent hierarchy and specialization, and writing, to mention a few of its elements, was no inevitable step in human “progress”; neither was language itself. The reality of pre-Neolithic life demonstrates the degradation or defeat involved in what has been generally seen as an enormous step forward, an admirable transcending of nature, etc.. In this light, many of the insights of Horkheimer and Adorno in the *Dialectic of Enlightenment* (such as the linking of progress in instrumental control with regression in affective experience) are made equivocal by their false conclusion that “Men have always had to choose between their subjugation to nature or the subjugation of nature to the Self.”

“Nowhere is civilization so perfectly mirrored as in speech,” as Pei commented, and in some very significant ways language has not only reflected but determined shifts in human life. The deep, powerful break that was announced by the birth of language prefigured and overshadowed the arrival of civilization and history, a mere 10,000 years ago. In the reach of language, “the whole of History stands unified and complete in the manner of a Natural Order,” says Barthes.

Mythology, which, as Cassirer noted, “is from its very beginning potential religion,” can be understood as a function of language, subject to its requirements like any ideological product. The nineteenth-century linguist Muller described mythology as a “disease of language” in just this sense; language deforms thought by its inability to describe things directly. “Mythology is inevitable, it is natural, it is an inherent necessity of language...(It is) the dark shadow which throws upon thought, and which can never disappear till language becomes entirely commensurate with thought, which it never will.”

It is little wonder, then, that the old dream of a *lingua Adamica*, a “real” language consisting not of conventional signs but expressing the direct, unmediated meaning of things, has been an integral part of humanity’s longing for a lost primeval state. As remarked upon above, the Tower of Babel is one of the enduring significations of this yearning to truly commune with each other and nature.

In that earlier (but long enduring) condition nature and society formed a coherent whole, interconnected by the closest bonds. The step from participation in the totality of nature to religion involved a detaching of forces and beings into outward, inverted existences. This separation took the form of deities, and the religious practitioner, the shaman, was the first specialist.

The decisive mediations of mythology and religion are not, however, the only profound cultural developments underlying our modern estrangement. Also in the Upper Paleolithic era, as the species Neanderthal gave way to Cro-Magnon (and the brain actually shrank in size), art was born. In the celebrated cave paintings of roughly 30,000 years ago is found a wide assortment of abstract signs; the symbolism of late Paleolithic art slowly stiffens into the much more stylized forms of the Neolithic agriculturalists. During this period, which is either synonymous with the beginnings of language or registers its first real dominance, a mounting unrest surfaced. John Pfeiffer described this in terms of the erosion of the egalitarian hunter-gatherer traditions, as Cro-Magnon established its hegemony. Whereas there was “no trace of rank” until the Upper Paleolithic, the emerging division of labor and its immediate social consequences demanded a disciplining of those resisting the gradual approach of civilization. As a formalizing, indoctrinating device, the dramatic power of art fulfilled this need for cultural coherence and the continuity of authority. Language, myth, religion and art thus advanced as deeply “political” conditions of social life, by which the artificial media of symbolic forms replaced the directly-lived quality of life before division of labor. From this point on, humanity could no longer see reality face to face; the logic of domination drew a veil over play, freedom, affluence.

At the close of the Paleolithic Age, as a decreased proportion of verbs in the language reflected the decline of unique and freely chosen acts in consequence of division of labor, language still possessed no tenses. Although the creation of a symbolic world was the condition for the existence of time, no fixed differentiations had developed before hunter-gatherer life was displaced by Neolithic farming. But when every verb shows a tense, language is “demanding lip service to time even when time is furthest of our thoughts.” (Van Orman Quine 1960) From this point one can ask whether time exists apart from grammar. Once the structure of speech incorporates time and is thereby animated by it at every expression, division of labor conclusively destroyed an

earlier reality. With Derrida, one can accurately refer to “language as the origin of history.” Language itself is a repression, and along its progress repression gathers—as ideology, as work—so as to generate historical time. Without language all of history would disappear.

Pre-history is pre-writing; writing of some sort is the signal that civilization has begun. “Once gets the impression,” Freud wrote in *The Future of an Illusion*, “that civilization is something which was imposed on a resisting majority by a minority which understood how to obtain possession of the means of power and coercion.” If the matter of time and language can seem problematic, writing as a stage of language makes its appearance contributing to subjugation in rather naked fashion. Freud could have been legitimately pointed to written language as the lever by which civilization was imposed and consolidated.

By about 10,000 B.C., extensive division of labor had produced the kind of social control reflected by cities and temples. The earliest writings are records of taxes, laws, terms of labor servitude. This objectified domination thus originated from the practical needs of political economy. An increased use of letters and tablets soon enabled those in charge to reach new heights of power and conquest, as exemplified in the new form of government commanded by Hammurabi of Babylon. As Levi-Strauss put it, writing “seems to favor rather the exploitation than the enlightenment of mankind. Writing, on this its first appearance in our midst, had allied itself with falsehood.”

Language at this juncture becomes the representation of representation, in hieroglyphic and ideographic writing and then in phonetic-alphabetic writing. The progress of symbolization, from the symbolizing of words, to that of syllables, and finally to letters in an alphabet, imposed an increasingly irresistible sense of order and control. And in the reification that writing permits, language is no longer tied to a speaking subject or community of discourse, but creates an autonomous field from which every subject can be absent.

In the contemporary world, the avant-garde of art has, most noticeably, performed the gestures of refusal of the prison of language. Since Mallarmé, a good deal of modernist poetry and prose has moved against the taken-for-grantedness of normal speech. To the question “Who is speaking?” Mallarmé answered, “Language is speaking.” After this reply, and especially since the explosive period around World War I when Joyce, Stein and others attempted a new syntax as well as a new vocabulary, the restraints and distortions of language have been assaulted wholesale in literature. Russian futurists, Dada (e.g. Hugo Ball’s efforts in the 1920s to create “poetry without words”), Artaud, the Surrealists and lettristes were among the more exotic elements of a general resistance to language.

The Symbolist poets, and many who could be called their descendants, held that defiance of society also includes defiance of its language. But inadequacy in the former arena precluded success in the latter, bringing one to ask whether avant-garde strivings can be anything more than abstract, hermetic gestures. Language, which at any given moment embodies the ideology of a particular culture, must be ended in order to abolish both categories of estrangement; a project of some considerable dimensions, let us say. That literary texts (e.g. *Finnegan’s Wake*, the poetry of e.e. cummings) breaks the rules of language seems mainly to have the paradoxical effect of evoking the rules themselves. By permitting the free play of ideas about language, society treats these ideas as mere play.

The massive amount of lies—official, commercial and otherwise—is perhaps in itself sufficient to explain why Johnny Can’t Read or Write, why illiteracy is increasing in the metropole. In any case, it is not only that “the pressure on language has gotten very great,” according to Canetti, but

that “unlearning” has come “to be a force in almost every field of thought,” in Robert Harbison’s estimation.

Today “incredible” and “awesome” are applied to the most commonly trivial and boring, it is no accident that powerful and shocking words barely exist anymore. The deterioration of language mirrors a more general estrangement; it has become almost totally external to us. From Kafka to Pinter silence itself is a fitting voice of our times. “Few books are forgivable. Black on the canvas, silence on the screen, an empty white sheet of paper, are perhaps feasible,” as R.D. Laing put it so well. Meanwhile, the structuralists—Levi-Strauss, Barthes, Foucault, Lacan, Derrida—have been almost entirely occupied with the duplicity language in their endless exegetical burrowings into it. They have virtually renounced the project of extracting meaning from language.

I am writing (obviously) enclosed in language, aware that language reifies the resistance to reification. As T.S. Eliot’s Sweeney explains, “I’ve gotta use words when I talk to you.” One can imagine replacing the imprisonment of time with a brilliant present—only by imagining a world without division of labor, without that divorce from nature from which all ideology and authority accrue. We couldn’t live in this world without language and that is just how profoundly we must transform this world.

Words bespeak a sadness; they are used to soak up the emptiness of unbridled time. We have all had that desire to go further, deeper than words, the feeling of wanting only to be done with all the talk, knowing that being allowed to live coherently erases the need to formulate coherence.

There is a profound truth to the notion that “lovers need no words.” The point is that we must have a world of lovers, a world of the face-to-face, in which even names can be forgotten, a world which knows that enchantment is the opposite of ignorance. Only a politics that undoes language and time and is thus visionary to the point of voluptuousness has any meaning.

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Numb and Number

John Zerzan

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The digital age is pre-eminently the ultimate reign of Number. The time of Big Data, computers (e.g. China's, world's fastest) that can process 30 quadrillion transactions per second, algorithms that increasingly predict—and control—what happens in society. Standardized testing is another example of the reductive disease of quantification.

Number surpasses all other ideas for its combination of impact and implication. Counting means imposing a definition and a control, assigning a number value. It is the foundation for a world in which whatever can be domesticated and controlled can also be commodified. Number is the key to mastery: everything must be measured, quantified. It is not what we can do with number, but what it does to us. Like technology, its intimate ally, number is anything but neutral. It tries to make us forget that there is so much that shouldn't or can't be measured.

Fifth Estate published my "Number: Its Origin and Evolution" in Summer 1985, just as the digital age was gaining traction following the personal computer explosion at the beginning of the 80s.ⁱ The quickening (anti-) pulse of technological change over the past 30 years has been at base a mathematization. Social life in the post-community era is detached, disembodied, drained, statistical. Its core is administration, just as the essence of number is calculation. "Mathematical thinking is coercive," disclosed British philosopher J.R. Lucas.ⁱⁱ Number totalizes; in mathematics, ambiguity is anathema. The technoculture obeys these norms, and we dance to its tune, its code: number.

But there are some who applaud the new, always more arid reality. And postmodernism wasn't the nadir of thought, after all. Alain Badiou denies that the Techno Age brings more and more nihilism and mediocrity. Mocking Heidegger's critique of the ascendancy of technology, he declares that there's not enough of it!ⁱⁱⁱ

Badiou's *Being and Event* (1988), empty and ahistorical, somehow installed him as arguably the biggest star of philosophy in the West. *Number and Numbers* (1990) is his follow-up hymn to estrangement.^{iv} Mathematics is philosophy, is being, in a formulation as hideous as it is astounding. Fellow Marxist-Leninist and postmodern/speed freak/pop culture clown Slavoj Žižek proclaimed *Number and Numbers* "breathtaking...[it] announces a new epoch in philosophy."^v Žižek is correct, but only in a thoroughly negative sense. Michel Foucault evidently didn't see Badiou coming when he held that "theory is by nature opposed to power."^{vi}

Number implies a relationship and that relationship is precisely that of power, as with capital, but more primary. Communists like Badiou (and Žižek), needless to say, have never taken the

trouble to oppose power. A footnote by Andrew Gibson is revealing. Badiou had told him “that he has no liking for James Joyce. One suspects that there is simply too much world there for him.”vii Too much uncontrolled world.

Number is a form of being for Badiou. What’s more, “mathematics is the infinite development of what can be said of being qua being.”viii That is, mathematics is already philosophy; ontology is actually mathematics.

Postmodernism elevated liberal doubt as its response to anyone who could imagine a condition outside alienation and subjection. It worked in a negative vein (e.g. Derrida) to undermine any grounds for hope. Badiou promotes a positivity that works toward the same end. For him, politics is the possibility of a “rupture with what exists.”ix But he grounds this positive hope, his “rupture,” in what couldn’t possibly be more a part of alienation and subjection. Badiou translator Jason Barker notes correctly that “Badiou’s canonical politico-philosophical reference point is Althusser’s *Lenin and Philosophy and Other Essays*.”x The Stalinist Althusser supported the French Communist Party against the workers and students of the May ’68 uprising. As Badiou freely admits, “there is no theory of the subject in Althusser, nor could there ever be one.”xi Two communists joining hands against the individual, against liberation. What is “seemingly phrased in strictly mathematical language,” as Bruno Bosteels sees it, “is imported from the realm of militant politics.” Specifically the Marxist-Leninist versions of such categories, such as “normality, singularity, and excrescence.”xii Even more specifically, Maoism.

Francois Laruelle finds that Badiou’s “enterprise has no equivalent in the history of philosophy,” a fusion of Platonist mathematicism and Maoism.”xiii “Thought” at its most nakedly authoritarian on every level.

Platonism vis-à-vis math means that numbers are independently existing objects. But numbers are not out there, somewhere, to be discovered; they are invented, as Wittgenstein, for one, grasped quite well. Invented to meet the needs of complex, unequal societies. Counting, accounting, a growing obsession that began with domestication and civilization, has reached the point, according to Ellul, where “everything in human life that does not lend itself to mathematical treatment must be excluded.”xiv

We can count and measure only the lifeless because such processes necessarily exclude what is living. The noted 19th century mathematician Gottlob Frege proclaimed “the miracle of number” but also stated that “the highest degree of [mathematical] rigor...is at the furthest remove from what is natural.”xv As Thoreau put it succinctly, “Nature so abhors a straight line.”xvi

Philosopher of science Keith Devlin is wrong to aver that numbers “arise from the recognition of patterns in the world around us.”xvii They arise because they are necessary for running a certain kind of society; numbers have only an imposed relationship to what is found in the world. Math historian Graham Flegg makes a similar error when he asserts, “Numbers reveal the unity which underlies all of life as we experience it.”xviii The “unity” in question did not exist before it was produced, with the invaluable assistance of number.

In Badiou’s nonsensical formulation, mathematics is “the history of eternity.”xix It is considerably saner to notice that the development of math is intimately involved with the development of the whole of civilization. On the heels of domestication (and its progeny, private property), grain needed weighing for sale, and land needed surveying for ownership—and soon enough, for taxation. Geometry, after all, is literally “land measurement.” Organization and engineering certainly required the services of Egyptian and Babylonian mathematics, to enable the first two civilizations in the West.

It is no coincidence that it was the Babylonian/Sumerian civilization, the first real empire, which first developed the idea of written numbers.^{xx} Number is key to large-scale management and mobilization; numbers and empire have gone hand in hand since earliest times. Babylonian arithmetic was “fully articulated as an abstract computational science by about 2000 B.C.,”^{xxi} about 2000 years before the famed “classical” mathematics of the Greeks.

“All is number,” announced Pythagorus, who thereby founded a religion, it should be added. Plato, a Pythagorean, composed the soul from seven numbers in his *Timaeus*. And in India as well as in Greece, certain exacting ritual requirements were specified by geometrical exercises intended to avert suffering at the hands of the gods.^{xxii} Nor has this form of idealism died out; the 20th century mathematician-philosopher L.E.J. Brouwer regarded the universe as “a construction of the mathematician.”^{xxiii}

It was the wealthy, aristocratic Plato who famously asserted the ontological primacy of math, which Badiou unreservedly seconds. A corollary is that for Plato, the first upward steps out of the cave towards wisdom begin with mastery of the arts of number. This put thought on the path of representation and mathematical objectification. Mathematics’ more concrete, everyday role—to serve the needs of power—makes this path the history of oppression, rather than Badiou’s “history of eternity”.

Badiou approvingly quotes the German mathematician Richard Dedekind to the effect that “man is always counting.”^{xxiv} Of course it is well-established that in most primal communities people use only “one, two, many” as the limit of their interest in number. In a recent example, Daniel Everett, referring to his years in Amazonian Brazil, concludes that “the Piraha have no number at all and no counting in any form.”^{xxv}

Let us also add a qualification about the use of numbers. Ethnographer W.J. McGee judged that aboriginal people “commonly see in numbers qualities or potencies not customarily recognized by peoples of more advanced culture.”^{xxvi} The association or coloration used with numbers means that they had not yet lost their sense of the uniqueness of everything, every event. This is still present with early terms of measurement. The units—such as the yard, the foot, the pound—were of human size and reference, and local relevance, until mass long-distance civilization took over.

Negative numbers came of age in the latter half of the Middle Ages. They were of inestimable assistance with larger financial transactions in which there might be net losses. At this time international banking greatly expanded, giving math a new value.^{xxvii} Well before Galileo, Copernicus, and Descartes provided the Faustian underpinnings for number’s cardinal role in dominating nature, math had already become essential for merchants, cartographers, imperial navigators, bankers, and others.

The Scientific Revolution, chiefly of the 1600s, largely revolved around the spirit of number. In 1702 Fontenelle observed that the “geometric spirit” is required if order and precision are to be established.^{xxviii} This spirit bloomed with Immanuel Kant (1724–1804). Knowledge for him is mathematical knowledge. Necessary and a priori, already always present, number is central to all the categories of our cognitive process. The new prominence of the mathematical infected society at large. Enlightenment thinkers spoke of a comprehensive “geometry of politics,” a “social mathematics.”^{xxix}

In his *Description of New England* (1616), Captain John Smith asked native individuals how many fish they caught, in order to more accurately gauge the level of potential plunder. He found that “the Savages compare their store in the sea to the haire of their heads,”^{xxx} most likely an

unsatisfactory report. Obsession with a mathematical orientation was present in North America early on but was not pervasive until the 1820s, according to Patricia Cohen. Her *A Calculating People* focused on “the sudden popularity of numbers and statistics in Jacksonian America.”^{xxxix}

Counting consists of assigning words to things. The first counting symbols were, in fact, the first writing. At this early stage many cultures expressed letters and numbers by the same symbols. Aleph, for example, expressed both the first letter of the Hebrew alphabet and the first of the ordinal numbers.^{xxxix} Spengler pushed the connection much further, wondering whether with number one finds “the birth of grammar.”^{xxxix}

Measurement, like counting, deals with just one aspect of the object it is measuring and assigns a number to that aspect. This abstracting move is basic to the universal standardization of life inherent in globalizing civilization. Of course, there is and always has been resistance. But in the words of psychologist S.S. Stevens, “Given the deeply human need to quantify, could mathematics really have begun elsewhere than in measurement?”^{xxxix} In a similar vein, John Henslow found that “measurement is what defines humanity...is what distinguishes the civilized from the uncivilized.”^{xxxix}

Growing social complexity and the all-encompassing integration required by modern domination means more and more measurement. It is as ubiquitous as it is imposed. “A deeply human need”—or the dynamic of ruinous civilization? There is no civilization without measurement, but there is life outside civilization—and ultimately, perhaps only outside civilization.

The prevailing view is that knowledge is limited without measurement, that we can’t really grasp something unless it can be measured. The word “grasp” is telling; it belongs to the language of control. To control, dominate, and hold nature in our grasp, for example: the lexicon of domestication. Is this really a way of understanding? What is lost when we only measure? Does this approach not take us away from a more intimate knowing? Traditional indigenous people do not “grasp” in their knowing.

A small instance from the realm of “fitness”: e-devices with their apps for measuring bodily performance as a function of various rates: breath, pulse, etc. A way of externalizing and objectifying our own bodies, of losing touch with ourselves and our senses.

This is part of the growing technification and concomitant deskilling, hallmarks of the digital age. Ironically, this movement does not produce greater proficiency in numbers. Numeracy, in fact, is in decline. Computers have replaced cash registers; retail clerks have no need to make change, and many don’t know how. A friend, when asked for the time by a teenager, pointed to a nearby clock. The teen couldn’t tell time from a clockface, only a digital readout.

Inevitably asked for a definition of time, that always elusive question, Einstein replied that it’s what a clock measures. The correspondence between measurement and time has been much discussed; but in what does the measuring of time consist?

Plato found an intrinsic connection between time and number, but that only reminds us that we can’t be sure what kind of things time and number are. Aristotle claimed that things are in time the way what is counted is in number, as if that clarifies matters much.

In the 3rd century A.D. Plotinus asked, “Why should the mere presence of a number give us Time?”^{xxxix} Which is suggestive, in terms of how time stakes its claim, and prompts a closer look at timekeeping itself. Consider 7th century Bedouins in what is now Saudi Arabia. Though pastoral (and therefore domesticators), they had a very minimal sense of time. Along came Muhammad, who unveiled time as part of a new religion. Five compulsory prayer times regulated

each day. All our days, said the Prophet, are numbered, just as math-guided industrial processes would regulate and number them a millennium later.

For the Mayans and others in Mesoamerica, a focus on time and number mirrored a preoccupation with order and rule. Bergson's *durée*, or lived time, was an attempt to step outside of imposed, identically numbered time. But the bond between time and number has continued and deepened, as domesticating reality commandeers more and more places and lives on the planet.

"There is no way we can escape from numbers," concluded Graham Flegg.^{xxxvii} Philosopher Michel Serres agreed: "Wherever the road of mathematicity was opened, it was forever."^{xxxviii} The same unending servitude is consecrated by Badiou, who stakes thought itself on number. But we may imagine what could emerge when the counting and measuring and timing is over, by our own ending of it. Imagine what could emerge only in such a world.

The "elegance" of math? Much more akin to the coldness of advanced civilization. Political theorist Susan Buck-Morss expressed this with great eloquence: "The social body of civilization is impersonal, indifferent to that fellow-feeling that within a face-to-face society causes its members to act with moral concern."^{xxxix} Face-to-face, where there is little or no need of counting.

Dedekind said that numbers "are a means of apprehending more easily and more sharply the difference of things."^{xl} What difference could he have been referring to? The written numbering systems of the ancient Egyptians, Hittites, Greeks, and Aztecs were structurally identical,^{xli} and this congruence pointed toward the global homogenization so strongly underway now.

A hollowed-out mathematical order is that of closed-off coldness, indifference, cynicism. The rise in the incidence of autism is one sad aspect among many; it may be worth noting that a disproportionate number of math students and theorists have received a diagnosis of autism.^{xlii}

Number trumps quality and qualities; meanwhile Badiou bases his authoritarianism on the deepest grounding for massification and estrangement. Healthy individuals avoid such brutalist "thinkers." The 2nd century physician Galen provides a cautionary tale: "It has often happened that people have talked happily with me, because of my work among the sick, but when they discover that I am also an expert mathematician, they avoid me."^{xliii}

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Number: Its Origin and Evolution

John Zerzan

The wrenching and demoralizing character of the crisis we find ourselves in, above all, the growing emptiness of spirit and artificiality of matter, lead us more and to question the most commonplace of “givens.” Time and language begin to arouse suspicions; number, too, no longer seems “neutral.” The glare of alienation in technological civilization is too painfully bright to hide its essence now, and mathematics is the schema of technology.

It is also the language of science—how deep we must go, how far back to reveal the “reason” for damaged life? The tangled skein of unnecessary suffering, the strands of domination, are unavoidably being unreeled, by the pressure of an unrelenting present.

When we ask, to what sorts of questions is the answer a number, and try to focus on the meaning or the reasons for the emergence of the quantitative, we are once again looking at a decisive moment of our estrangement from natural being.

Number, like language, is always saying what it cannot say. As the root of a certain kind of logic or method, mathematics is not merely a tool but a goal of scientific knowledge: to be perfectly exact, perfectly self-consistent, and perfectly general. Never mind that the world is inexact, interrelated, and specific, that no one has ever seen leaves, trees, clouds, animals, that are two the same, just as no two moments are identical. As Dingle said, “All that can come from the ultimate scientific analysis of the material world is a set of numbers,” reflecting upon the primacy of the concept of identity in math and its offspring, science.

A little further on I will attempt an “anthropology” of numbers and explore its social embeddedness. Horkheimer and Adorno point to the basis of the disease: “Even the deductive form of science reflects hierarchy and coercion...the whole logical order, dependency, progression, and union of [its] concepts is grounded in the corresponding conditions of social reality” —that is, the division of labor.

If mathematical reality is the purely formal structure of normative or standardizing measure (and later, science), the first thing to be measured at all was time. The primal connection between time and number becomes immediately evident. Authority, first objectified as time, becomes rigidified by the gradually mathematized consciousness of time. Put slightly differently, time is a measure and exists as a reification or materiality thanks to the introduction of measure.

The importance of symbolization should also be noted, in passing, for a further interrelation consists of the fact that while the basic feature of all measurement is symbolic representation, the creation of a symbolic world is the condition of the existence of time.

To realize that representation begins with language, actualized in the creation of a reproducible formal structure, is already to apprehend the fundamental tie between language and number. An impoverished present renders it easy to see, as language becomes more impoverished, that math is simply the most reduced and drained language. The ultimate step in formalizing a language is to transform it into mathematics; conversely, the closer language comes to the dense concretions of reality, the less abstract and exact it can be.

The symbolizing of life and meaning is at its most versatile in language, which, in Wittgenstein's later view, virtually constitutes the world. Further, language, based as it is on a symbolic faculty for conventional and arbitrary equivalences, finds in the symbolism of math its greatest refinement. Mathematics, as judged by Max Black, is the "grammar of all symbolic systems."

The purpose of the mathematical aspect of language and concept is the more complete isolation of the concept from the senses. Math is the paradigm of abstract thought for the same reason that Levy termed pure mathematics "the method of isolation raised to a fine art." Closely related are its character of "enormous generality," as discussed by Parsons, its refusal of limitations on said generality, as formulated by Whitehead.

This abstracting process and its formal, general results provide a content that seems to be completely detached from the thinking individual; the user of a mathematical system and his/her values do not enter into the system. The Hegelian idea of the autonomy of alienated activity finds a perfect application with mathematics; it has its own laws of growth, its own dialectic, and stands over the individual as a separate power. Self-existent time and the first distancing of humanity from nature, it must be preliminarily added, began to emerge when we first began to count. Domination of nature, and then, of humans is thus enabled.

In abstraction is the truth of Heyting's conclusion that "the characteristic of mathematical thought is that it does not convey truth about the external world." Its essential attitude toward the whole colorful movement of life is summed up by, "Put this and that equal to that and this!" Abstraction and equivalence of identity are inseparable; the suppression of the world's richness which is paramount in identity brought Adorno to the "primal world of ideology." The untruth of identity is simply that the concept does not exhaust the thing conceived.

Mathematics is reified, ritualized thought, the virtual abandonment of thinking. Foucault found that "in the first gesture of the first mathematician one saw the constitution of an ideality that has been deployed throughout history and has questioned only to be repeated and purified."

Number is the most momentous idea in the history of human nature. Numbering or counting (and measurement, the process of assigning numbers to represent qualities) gradually consolidated plurality into quantification, and thereby produced the homogenous and abstract character of number, which made mathematics possible. From its inception in elementary forms of counting (beginning with a binary division and proceeding to the use of fingers and toes as bases) to the Greek idealization of number, an increasingly abstract type of thinking developed, paralleling the maturation of the time concept. As William James put it, "the intellectual life of man consists almost wholly in his substitution of a conceptual order for the perceptual order in which his experience originally comes."

Boas concluded that "counting does not become necessary until objects are considered in such generalized form that their individualities are entirely lost sight of." In the growth of civilization we have learned to use increasingly abstract signs to point at increasingly abstract referents. On the other hand, prehistoric languages had a plethora of terms for the touched and felt, while very often having no number words beyond *one*, *two* and *many*. Hunter-gatherer humanity had little if

any need for numbers, which is the reason Hallpike declared that “we cannot expect to find that an operational grasp of quantification will be a cultural norm in many primitive societies.” Much earlier, and more crudely, Allier referred to “the repugnance felt by uncivilized men towards any genuine intellectual effort, more particularly towards arithmetic.”

In fact, on the long road toward abstraction, from an intuitive sense of amount to the use of different sets of number words for counting different kinds of things, along to fully abstract number, there was an immense resistance, as if the objectification involved was somehow seen for what it was. This seems less implausible in light of the striking, unitary beauty of tools of our ancestors half a million years ago, in which the immediate artistic and technical (for want of better words) touch is so evident, and by “recent studies which have demonstrated the existence, some 300,000 years ago, of mental ability equivalent to modern man,” in the words of British archeologist Clive Gamble.

Based on observations of surviving tribal peoples, it is apparent, to provide another case in point, that hunter-gatherers possessed an enormous and intimate understanding of the nature and ecology of their local places, quite sufficient to have inaugurated agriculture perhaps hundreds of thousands of years before the Neolithic revolution. But a new kind of relationship to nature was involved; one that was evidently refused for so many, many generations.

To us it has seemed a great advantage to abstract from the natural relationship of things, whereas in the vast Stone Age being was apprehended and valued as a whole, not in terms of separable attributes. Today, as ever, when a large family sits down to dinner and it is noticed that someone is missing, this is not accomplished by counting. Or when a hut was built in prehistoric times, the number of required posts was not specified or counted, rather they were inherent to the idea of the hut, intrinsically involved in it. (Even in early agriculture, the loss of a herd animal could be detected not by counting but by missing a particular face or characteristic features; it seems clear, however, as Bryan Morgan argues, that “man’s first use for a number system” was certainly as a control of domesticated flock animals, as wild creatures became products to be harvested.) In distancing and separation lies the heart of mathematics: the discursive reduction of patterns, states and relationships which we initially perceived as wholes.

In the birth of controls aimed at control of what is free and unordered, crystallized by early counting, we see a new attitude toward the world. If naming is a distancing, a mastery, so too is number, which is impoverished naming. Though numbering is a corollary of language, it is the signature of a critical breakthrough of alienation. The root meanings of number are instructive: “quick to grasp or take” and “to take, especially to steal,” also “taken, seized, hence...numb.” What is made an object of domination is thereby reified, becomes numb.

For hundreds of thousands of years hunter-gatherers enjoyed a direct, unimpaired access to the raw materials needed for survival. Work was not divided nor did private property exist. Dorothy Lee focused on a surviving example from Oceania, finding that none of the Trobrianders’ activities are fitted into a linear, divisible line. “There is no job, no labor, no drudgery which finds its reward outside the act.” Equally important is the “prodigality,” “the liberal customs for which hunters are properly famous,” “their inclination to make a feast of everything on hand,” according to Sahlins.

Sharing and counting or exchange are, of course, relative opposites. Where articles are made, animals killed or plants collected for domestic use and not for exchange, there is no demand for standardized numbers or measurements. Measuring and weighing possessions develops later, along with the measurement and definition of property rights and duties to authority. Isaac lo-

cates a decisive shift toward standardization of tools and language in the Upper Paleolithic period, the last stage of hunter-gatherer humanity. Numbers and less abstract units of measurement derive, as noted above, from the equalization of differences. Earliest exchange, which is the same as earliest division of labor, was indeterminate and defied systematization; a table of equivalences cannot really be formulated. As the predominance of the gift gave way to the progress of exchange and division of labor, the universal interchangeability of mathematics finds its concrete expression. What comes to be fixed as a principle of equal justice—the ideology of equivalent exchange—is only the practice of the domination of division of labor. Lack of a directly-lived existence, the loss of autonomy that accompany separation from nature are the concomitants of the effective power of specialists.

Mauss stated that exchange can be defined only by all the institutions of society. Decades later Belshaw grasped division of labor as not merely a segment of society but the whole of it. Likewise sweeping, but realistic, is the conclusion that a world without exchange or fractionalized endeavor would be a world without number.

Clastres, and Childe among others well before him, realized that people's ability to produce a surplus, the basis of exchange, does not necessarily mean that they decide to do so. Concerning the nonetheless persistent view that only mental/cultural deficiency accounts for the absence of surplus, "nothing is more mistaken," judged Clastres. For Sahlins, "Stone Age economics" was "intrinsically an anti-surplus system," using the term system extremely loosely. For long ages humans had no desire for the dubious compensations attendant on assuming a divided life, just as they had no interest in number. Piling up a surplus of anything was unknown, apparently, before Neanderthal times passed to the Cro-Magnon; extensive trade contracts were nonexistent in the earlier period, becoming common thereafter with Cro-Magnon society.

Surplus was fully developed only with agriculture, and characteristically the chief technical advancement of Neolithic life was the perfection of the container: jars, bins, granaries and the like. This development also gives concrete form to a burgeoning tendency toward spatialization, the sublimation of an increasingly autonomous dimension of time into spatial forms. Abstraction, perhaps the first spatialization, was the first compensation for the deprivation caused by the sense of time. Spatialization was greatly refined with number and geometry. Ricoeur notes that "Infinity is discovered...in the form of the idealization of magnitudes, of measures, of numbers, figures," to carry this still further. This quest for unrestricted spatiality is part and parcel of the abstract march of mathematics. So then is the feeling of being freed from the world, from finitude that Hannah Arendt described in mathematics.

Mathematical principles and their component numbers and figures seem to exemplify a timelessness which is possibly their deepest character. Hermann Weyl, in attempting to sum up (no pun intended) the "life sum of mathematics," termed it the science of the infinite. How better to express an escape from reified time than by making it limitlessly subservient to space—in the form of math.

Spatialization—like math—rests upon separation; inherent in it are division and an organization of that division. The division of time into parts (which seems to have been the earliest counting or measuring) is itself spatial. Time has always been measured in such terms as the movement of the earth or moon, or the hands of a clock. The first time indications were not numerical but concrete, as with all earliest counting. Yet, as we know, a number system, paralleling time, becomes a separate, invariable principle. The separations in social life—most fundamentally, division of labor—seem alone able to account for the growth of estranging conceptualization.

In fact, two critical mathematical inventions, zero and the place system, may serve as cultural evidence of division of labor. Zero and the place system, or position, emerged independently, “against considerable psychological resistance,” in the Mayan and Hindu civilizations. Mayan division of labor, accompanied by enormous social stratification (not to mention a notorious obsession with time, and large-scale human sacrifice at the hands of a powerful priest class), is a vividly documented fact, while the division of labor reflected in the Indian caste system was “the most complex that the world had seen before the Industrial Revolution.” (Coon 1954)

The necessity of work (Marx) and the necessity of repression (Freud) amount to the same thing: civilization. These false commandments turned humanity away from nature and account for history as a “steadily lengthening chronicle of mass neurosis.” (Turner 1980) Freud credits scientific/mathematical achievement as the highest moment of civilization, and this seems valid as a function of its symbolic nature. “The neurotic process is the price we pay for our most precious human heritage, namely our ability to represent experience and communicate our thoughts by means of symbols.”

The triad of symbolization, work and repression finds its operating principle in division of labor. This is why so little progress was made in accepting numerical values until the huge increase in division of labor of the Neolithic revolution: from the gathering of food to its actual production. With that massive changeover mathematics became fully grounded and necessary. Indeed it became more a category of existence than a mere instrumentality.

The fifth century B.C. historian Herodotus attributed the origin of mathematics to the Egyptian king Sesostris (1300 B.C.), who needed to measure land for tax purposes. Systematized math—in this case geometry, which literally means “land measuring”—did in fact arise from the requirements of political economy, though it predates Sesostris’ Egypt by perhaps 2000 years. The food surplus of Neolithic civilization made possible the emergence of specialized classes of priests and administrators which by about 3200 B.C. had produced the alphabet, mathematics, writing and the calendar. In Sumer the first mathematical computations appeared, between 3500 and 3000 B.C., in the form of inventories, deeds of sale, contracts, and the attendant unit prices, units purchased, interest payments, etc.. As Bernal points out, “mathematics, or at least arithmetic, came even before writing.” The number symbols are most probably older than any other elements of the most ancient forms of writing.

At this point domination of nature and humanity are signaled not only by math and writing, but also by the walled, grain-stocked city, along with warfare and human slavery. “Social labor” (division of labor), the coerced coordination of several workers at once, is thwarted by the old, personal measures; lengths, weights, volumes must be standardized. In this standardization, one of the hallmarks of civilization, mathematical exactitude and specialized skill go hand in hand. Math and specialization, requiring each other, developed apace and math became itself a specialty. The great trade routes, expressing the triumph of division of labor, diffused the new, sophisticated techniques of counting, measurement, and calculation.

In Babylon, merchant-mathematicians contrived a comprehensive arithmetic between 3000 and 2500 B.C., which system “was fully articulated as an abstract computational science by about 2000 B.C.. (Brainerd 1979) In succeeding centuries the Babylonians even invented a symbolic algebra, though Babylonian-Egyptian math has been generally regarded as extremely trial-and-error or empiricist compared to that of the much later Greeks.

To the Egyptians and Babylonians mathematical figures had concrete referents: algebra was an aid to commercial transactions, a rectangle was a piece of land of a particular shape. The Greeks,

however, were explicit in asserting that geometry deals with abstractions, and this development reflects an extreme form of division of labor and social stratification. Unlike Egyptian or Babylonian society, in Greece, a large slave class performed all productive labor, technical as well as unskilled, such that the ruling class milieu that included mathematicians disdained practical pursuits or applications.

Pythagoras, more or less the founder of Greek mathematics (6th century, B.C.) expressed this rarefied, abstract bent in no uncertain terms. To him numbers were immutable and eternal. Directly anticipating Platonic idealism, he declared that numbers were the intelligible key to the universe. Usually encapsulated as “everything is number,” the Pythagorean philosophy held that numbers exist in a literal sense and are quite literally all that does exist.

This form of mathematical philosophy, with the extremity of its search for harmony and order, may be seen as a deep fear of contradiction or chaos, an oblique acknowledgement of the massive and perhaps unstable repression underlying Greek society. An artificial intellectual life that rested so completely on the surplus created by slaves was at pains to deny the senses, the emotions and the real world. Greek sculpture is another example, in its abstract, ideological conformations, devoid of feeling or their histories. Its figures are standardized idealizations; the parallel with a highly exaggerated cult of mathematics is manifest.

The independent existence of ideas, which is Plato’s fundamental premise, is directly derived from Pythagoras, just as his whole theory of ideas flows from the special character of mathematics. Geometry is properly an exercise of disembodied intellect, Plato taught, in character with his view that reality is a world of form from which matter, in every important respect, is banished. Philosophical idealism was thus established out of this world-denying impoverishment, based on the primacy of quantitative thinking. As C.I. Lewis observed, “from Plato to the present day, all the major epistemological theories have been dominated by, or formulated in the light of , accompanying conceptions of mathematics.”

It is no less accidental that Plato wrote, “Let only geometers enter,” over the door to his Academy, than that his totalitarian *Republic* insists that years of mathematical training are necessary to correctly approach the most important political and ethical questions. Consistently, he denied that a stateless society ever existed, identifying such a concept with that of a “state of swine.”

Systematized by Euclid in the third century B.C., about a century after Plato, mathematics reached an apogee not to be matched for almost two millennia; the patron saint of intellect for the slave-based and feudal societies that followed was not Plato, but Aristotle, who criticized the former’s Pythagorean reduction of science to mathematics.

The long non-development of math, which lasted virtually until the end of Renaissance, remains something of a mystery. But growing trade began to revive the art of the quantitative by the twelfth and thirteenth centuries. The impersonal order of the counting house in the new mercantile capitalism exemplified a renewed concentration on abstract measurement. Mumford stresses the mathematical prerequisite of later mechanization and standardization; in the rising merchant world, “counting numbers began here and in the end numbers alone counted.” (Mumford 1967)

But the Renaissance conviction that mathematics should be applicable to all the arts (not to mention such earlier and atypical forerunners as Roger Bacon’s 13th century contribution toward a strictly mathematical optics), was a mild prelude to the magnitude of number’s triumph in the seventeenth century.

Though they were soon eclipsed by other advances of the 1600's, Johannes Kepler and Francis Bacon revealed its two most important and closely related aspects early in the century. Kepler, who completed the Copernican transition to the heliocentric model, saw the real world as composed of quantitative differences only; its differences are strictly those of number. Bacon, in *The New Atlantis* (c.1620) depicted an idealized scientific community, the main object of which was domination of nature; as Jaspers put it, "Mastery of nature... 'knowledge is power,' has been the watchword since Bacon."

The century of Galileo and Descartes—pre-eminent among those who deepened all the previous forms of quantitative alienation and thus sketched a technological future—began with a qualitative leap in the division of labor. Franz Borkenau provided the key as to why a profound change in the Western world-view took place in the seventeenth century, a movement to a fundamentally mathematical-mechanistic outlook. According to Borkenau, a great extension of division of labor, occurring from about 1600, introduced the novel notion of abstract work. This reification of human activity proved pivotal.

Along with degradation of work, the clock is the basis of modern life, equally "scientific" in its reduction of life to a measurability, via objective, commodified units of time. The increasingly accurate and ubiquitous clock reached a real domination in the seventeenth century, as, correspondingly, "the champions of the new sciences manifested an avid interest in horological matters."

Thus it seems fitting to introduce Galileo in terms of just this strong interest in the measurement of time; his invention of the first mechanical clock based on the principle of the pendulum was likewise a fitting capstone to his long career. As increasingly objectified or reified time reflects, at perhaps the deepest level, an increasingly alienated social world, Galileo's principal aim was the reduction of the world to an object of mathematical dissection.

Writing a few years before World War II and Auschwitz, Husserl located the roots of the contemporary crisis in this objectifying reduction and identified Galileo as its main progenitor. The life-world has been "devalued" by science precisely insofar as the "mathematization of nature" initiated by Galileo has proceeded—clearly no small indictment. (Husserl 1970)

For Galileo as with Kepler, mathematics was the "root grammar of the new philosophical discourse that constituted modern scientific method." He enunciated the principle, "to measure what is measurable and try to render what is not so yet." Thus he resurrected the Pythagorean-Platonic substitution of a world of abstract mathematical relations for the real world and its method of absolute renunciation of the senses' claim to know reality. Observing this turning away from quality to quantity, this plunge into a shadow-world of abstractions, Husserl concluded that modern, mathematical science prevents us from knowing life as it is. And the rise of science has fueled ever more specialized knowledge, that stunning and imprisoning progression so well-known by now.

Collingwood called Galileo "the true father of modern science" for the success of his dictum that the book of nature "is written in mathematical language" and its corollary that therefore "mathematics is the language of science." Due to this separation from nature, Gillispie evaluated, "After Galileo, science could no longer be humane."

It seems very fitting that the mathematician who synthesized geometry and algebra to form analytic geometry (1637) and who, with Pascal, is credited with inventing calculus, should have shaped Galilean mathematicism into a new system of thinking. The thesis that the world is organized in such a way that there is a total break between people and the natural world, contrived as

a total and triumphant world-view, is the basis for Descartes' renown as the founder of modern philosophy. The foundation of his new system, the famous "cogito ergo sum," is the assigning of scientific certainty to separation between mind and the rest of reality.

This dualism provided an alienated means for seeing only a completely objectified nature. In the *Discourse on Method*...Descartes declared that the aim of science is "to make us as masters and possessors of nature." Though he was a devout Christian, Descartes renewed the distancing from life that an already fading God could no longer effectively legitimize. As Christianity weakened, a new central ideology of estrangement came forth, this one guaranteeing order and domination based on mathematical precision.

To Descartes the material universe was a machine and nothing more, just as animals "indeed are nothing else but engines, or matter sent into a continual and orderly motion." He saw the cosmos itself as a giant clockwork just when the illusion that time is a separate, autonomous process was taking hold. Also as living, animate nature died, dead, inanimate money became endowed with life, as capital and the market assumed the attributes of organic processes and cycles. Lastly, Descartes mathematical vision eliminated any messy, chaotic or alive elements and ushered in an attendant mechanical world-view that was coincidental with a tendency toward central government controls and concentration of power in the form of the modern nation-state. "The rationalization of administration and of the natural order were occurring simultaneously," in the words of Merchant. The total order of math and its mechanical philosophy of reality proved irresistible; by the time of Descartes' death in 1650 it had become virtually the official framework of thought throughout Europe.

Leibniz, a near-contemporary, refined and extended the work of Descartes; the "pre-established harmony" he saw in existence is likewise Pythagorean in lineage. This mathematical harmony, which Leibniz illustrated by reference to two independent clocks, recalls his dictum, "There is nothing that evades number." Leibniz, like Galileo and Descartes, was deeply interested in the design of clocks.

In the binary arithmetic he devised, an image of creation was evoked; he imagined that one represented God and zero the void, that unity and zero expressed all numbers and all creation. He sought to mechanize thought by means of a formal calculus, a project which he too sanguinely expected would be completed in five years. This undertaking was to provide all the answers, including those to questions of morality and metaphysics. Despite this ill-fated effort, Leibniz was perhaps the first to base a theory of math on the fact that it is a universal symbolic language; he was certainly the "first great modern thinker to have a clear insight into the true character of mathematical symbolism."

Furthering the quantitative model of reality was the English royalist Hobbes, who reduced the human soul, will, brain, and appetites to matter in mechanical motion, thus contributing directly to the current conception of thinking as the "output" of the brain as computer.

The complete objectification of time, so much with us today, was achieved by Issac Newton, who mapped the workings of the Galilean-Cartesian clockwork universe. Product of the severely repressed Puritan outlook, which focused on sublimating sexual energy into brutalizing labor, Newton spoke of absolute time, "flowing equably without regard to anything external." Born in 1642, the year of Galileo's death, Newton capped the Scientific Revolution of the seventeenth century by developing a complete mathematical formulation of nature as a perfect machine, a perfect clock.

Whitehead judged that “the history of seventeenth-century science reads as though it were vivid dream of Plato or Pythagoras,” noting the astonishingly refined mode of its quantitative thought. Again the correspondence with a jump in division of labor is worth pointing out; as Hill described mid-seventeenth century England, “...significant specialization began to set in. The last polymaths were dying out...” The songs and dances of the peasants slowly died, and in a rather literal mathematization, the common lands were closed and divided.

Knowledge of nature was part of philosophy until this time; the two parted company as the concept of mastery of nature achieved its definitive modern form. Number, which first issued from dissociation from the natural world, ended up describing and dominating it.

Fontenelle’s *Preface on the Utility of Mathematics and Physics* (1702) celebrated the centrality of quantification to the entire range of human sensibilities, thereby aiding the eighteenth century consolidation of the breakthroughs of the preceding era. And whereas Descartes had asserted that animals could not feel pain because they are soulless, and that man is not exactly a machine because he had a soul, LeMetrie, in 1747, went the whole way and made man completely mechanical in his *L’Homme Machine*.

Bach’s immense accomplishments in the first half of the eighteenth century also throw light on the spirit of math unleashed a century earlier and helped shape culture to that spirit. In reference to the rather abstract music of Bach, it has been said that he “spoke in mathematics to God.” (LeShan & Morgenau 1982) At this time the individual voice lost its independence and tone was no longer understood as sung but as a mechanical conception. Bach, treating music as a sort of math, moved it out of the stage of vocal polyphony to that of instrumental harmony, based always upon a single, autonomous voice fixed by instruments, instead of somewhat variable with human voices.

Later in the century Kant stated that in any particular theory there is only as much real science as there is mathematics, and devoted a considerable part of his *Critique of Pure Reason* to an analysis of the ultimate principles of geometry and arithmetic.

Descartes and Leibniz strove to establish a mathematical science method as the paradigmatic way of knowing, and saw the possibility of a singular universal language, on the model of empirical symbols, that could contain the whole of philosophy. The eighteenth century Enlightenment thinkers actually worked at realizing this latter project. Condillac, Rousseau and others were also characteristically concerned with origins—such as the origin of language; their goal of grasping human understanding by taking language to its ultimate, mathematized symbolic level made them incapable of seeing that the origin of all symbolizing is alienation.

Symmetrical plowing is almost as old as agriculture itself, a means of imposing order on an otherwise irregular world. But as the landscape of cultivation became distinguished by linear forms of an increasingly mathematical regularity—including the popularity of formal gardens—another eighteenth-century mark of math’s ascendancy can be gauged.

In the early 1800s, however, the Romantic poets and artists, among others, protested the new vision of nature as a machine. Blake, Goethe and John Constable, for example, accused science of turning the world into a clockwork, with the Industrial Revolution providing ample evidence of its power to violate organic life.

The debasing of work among textile workers, which caused the furious uprisings of the English Luddites during the second decade of the nineteenth century, was epitomized by such automated and cheapened products as those of the Jacquard loom. This French device not only represented the mechanization of life and work unleashed by seventeenth century shifts, but

directly inspired the first attempts at the modern computer. The designs of Charles Babbage, unlike the “logic machines” of Leibniz and Descartes, involved both memory and calculating units under the control of programs via punched cards. The aims of the mathematical Babbage and the inventor-industrialist J.M. Jacquard can be said to rest on the same rationalist reduction of human activity to the machine as was then beginning to boom with industrialism. Quite in character, then, were the emphasis in Babbage’s mathematical work on the need for improved notation to further the processes of symbolization, his *Principles of Economy*, which contributed to the foundations of modern management—and his contemporary fame against London “nusianges,” such as street musicians!

Paralleling the full onslaught of industrial capitalism and the hugely accelerated division of labor that it brought was a marked advance in mathematical development. According to Whitehead, “During the nineteenth century pure mathematics made almost as much progress as during the preceding centuries from Pythagoras onwards.”

The non-Euclidean geometries of Bolyai, Lobachevski, Riemann and Klein must be mentioned, as well as the modern algebra of Boole, generally regarded as the basis of symbolic logic. Boolean algebra made possible a new level of formulized thought, as its founder pondered “the human mind...and instrument of conquest and dominion over the powers of surrounding nature,” (Boole 1952) in an unthinking mirroring of the mastery mathematized capitalism was gaining in the mid-1800s. (Although the specialist is rarely faulted by the dominant culture for his “pure” creativity, Adorno adroitly observed that “The mathematician’s resolute unconsciousness testifies to the connection between division of labor and ‘purity.’”)

If math is impoverished language, it can also be seen as the mature form of that sterile coercion known as formal logic. Bertrand Russell, in fact, determined that mathematics and logic had become one. Discarding unreliable, everyday language, Russell, Frege and others believed that in the further degradation and reduction of language lay the real hope for “progress in philosophy.”

The goal of establishing logic on mathematical grounds was related to an even more ambitious effort by the end of the nineteenth century, that of establishing the foundations of math itself. As capitalism proceeded to redefine reality in its own image and became desirous of securing its foundations, the “logic” stage of math in the late 19th and early 20th centuries, fresh from new triumphs, sought the same. David Hilbert’s theory of formalism, one such attempt to banish contradiction or error, explicitly aimed at safeguarding “the state power of mathematics for all time from all ‘rebellions’.”

Meanwhile, number seemed to be doing quite well without the philosophical underpinnings. Lord Kelvin’s late nineteenth century pronouncement that we don’t really know anything unless we can measure it bespoke an exalted confidence, just as Frederick Taylor’s Scientific Management was about to lead the quantification edge of industrial management further in the direction of subjugating the individual to the lifeless Newtonian categories of time and space.

Speaking of the latter, Capra has claimed that the theories of relativity and quantum physics, developed between 1905 and the late 1920s, “shattered all the principal concepts of the Cartesian world view and Newtonian mechanics.” But relativity theory is certainly mathematical formalism, and Einstein sought a unified field theory by geometrizing physics, such that success would have enabled him to have said, like Descartes, that his entire physics was nothing other than geometry. That measuring time and space (or “space-time”) is a relative matter hardly removes measurement as its core element. At the heart of quantum theory, certainly, is Heisenberg’s Uncertainty Principle, which does not throw out quantification but rather expresses the limitations of classical

physics in sophisticated mathematical ways. As Gillespie succinctly had it, Cartesian-Newtonian physical theory “was an application of Euclidean geometry to space, general relativity a spatialization of Riemann’s curvilinear geometry, and quantum mechanics a naturalization of statistical probability.” More succinctly still: “Nature, before and after the quantum theory, is that which is to be comprehended mathematically.”

During the first three decades of the 20th century, moreover, the great attempts by Russell & Whitehead, Hilbert, et al., to provide a completely unproblematic basis for the whole edifice of math, referred to above, went forward with considerable optimism. But in 1931 Kurt Godel dashed these bright hopes with his Incompleteness Theorem, which demonstrated that any symbolic system can be either complete or fully consistent, but not both. Godel’s devastating mathematical proof of this not only showed the limits of axiomatic number systems, by rules out enclosing nature by any closed, consistent language. If there are theorems or assertions within a system of thought which can neither be proved or disproved internally, if it is impossible to give a proof of consistency within the language used, as Godel and immediate successors like Tarski and Church convincingly argued, “any system of knowledge about the world is, and must remain, fundamentally incomplete, eternally subject to revision.” (Rucker 1982)

Morris Kline’s *Mathematics: The Loss of Certainty* related the “calamities” that have befallen the once seemingly inviolable “majesty of mathematics,” chiefly dating from Godel. Math, like language, used to describe the world and itself, fails in its totalizing quest, in the same way that capitalism cannot provide itself with unassailable grounding. Further, with Godel’s Theorem mathematics was not only “recognized to be much more abstract and formal than had been traditionally supposed,” but it also became clear that “the resources of the human mind have not been, and cannot be, fully formalized.” (Nagel & Newman 1958)

But who could deny that, in practice, quantity has been mastering us, with or without definitively shoring up its theoretical basis? Human helplessness seems to be directly proportional to mathematical technology’s domination over nature, or as Adorno phrased it, “the subjection of outer nature is successful only in the measure of the repression of inner nature.” And certainly understanding is diminished by number’s hallmark, division of labor. Raymond Firth accidentally exemplified the stupidity of advanced specialization, in a passing comment on a crucial topic: “the proposition that symbols are instruments of knowledge raises epistemological issues which anthropologists are not trained to handle.” The connection with a more common degradation is made by Singh, in the context of an ever more refined division of labor and a more and more technicised social life, noting that “automation of computation immediately paved the way for automatizing industrial operations.”

The heightened tedium of computerized office work is today’s very visible manifestation of mathematized, mechanized labor, with its neo-Taylorist quantification via electronic display screens, announcing the “information explosion” or “information society.” Information work is now the chief economic activity and information the distinctive commodity, in large part echoing the main concept of Shannon’s information theory of the late 1940s, in which “the production and the transmission of information could be defined quantitatively.” (Feinstein 1958)

From knowledge, to information, to data, the mathematizing trajectory moves away from meaning—paralleled exactly in the realm of “ideas” (those bereft of goals or content, that is) by the ascendancy of structuralism. The “global communications revolution” is another telling phenomenon, by which a meaningless “input” is to be instantly available everywhere among people who live, as never before, in isolation.

Into this spiritual vacuum the computer boldly steps. In 1950 Turing said, in answer to the question ‘can machines think?’, “I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted.” Note that his reply had nothing to do with the state of machines but wholly that of humans. As pressures build for life to become more quantified and machine-like, so does the drive to make machines more life-like.

By the mid-’60s, in fact, a few prominent voices already announced that the distinction between human and machine was about to be superseded—and saw this as positive. Mazlish provided an especially unequivocal commentary: “Man is on the threshold of breaking past the discontinuity between himself and machines...We cannot think any longer of man without a machine...Moreover, this change...is essential to our harmonious acceptance of an industrialized world.”

By the late 1980s thinking sufficiently impersonates the machine that Artificial Intelligence experts, like Minsky, can matter-of-factly speak of the symbol-manipulating brain as a “computer made of meat.” Cognitive psychology, echoing Hobbes, has become almost based on the computational model of thought in the decades since Turing’s 1950 prediction.

Heidegger felt that there is an inherent tendency for Western thinking to merge into the mathematical sciences, and saw science as “incapable of awakening, and in fact emasculating, the spirit of genuine inquiry.” We find ourselves, in an age when the fruits of science threaten to end human life altogether, when a dying capitalism seems capable of taking everything with it, more apt to want to discover the ultimate origins of the nightmare.

When the world and its thought (Levi-Strauss and Chomsky come immediately to mind) reach a condition that is increasingly mathematized and empty (where computers are widely touted as capable of feelings and even of life itself), the beginnings of this bleak journey, including the origins of the number concept, demand comprehension. It may be that this inquiry is essential to save us and our humanness.

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Number: Its Origin and Evolution

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Time and its Discontents

John Zerzan

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The dimension of time seems to be attracting great notice, to judge from the number of recent movies that focus on it, such as *Back to the Future*, *Terminator*, *Peggy Sue Got Married*, etc. Stephen Hawking's *A Brief History of Time* (1989) was a best-seller and became, even more surprisingly, a popular film. Remarkable, in addition to the number of books that deal with time, are the larger number which don't, really, but which feature the word in their titles nonetheless, such as Virginia Spate's *The Color of Time: Claude Monet* (1992). Such references have to do, albeit indirectly, with the sudden, panicky awareness of time, the frightening sense of our being tied to it. Time is increasingly a key manifestation of the estrangement and humiliation that characterize modern existence. It illuminates the entire, deformed landscape and will do so ever more harshly until this landscape and all the forces that shape it are changed beyond recognizing.

This contribution to the subject has little to do with time's fascination for film-makers or TV producers, or with the current academic interest in geologic conceptions of time, the history of clock technology and the sociology of time, or with personal observations and counsels on its use. Neither aspects nor excesses of time deserve as much attention as time's inner meaning and logic. For despite the fact that time's perplexing character has become, in John Michon's estimation, "almost an intellectual obsession" (1988), society is plainly incapable of dealing with it.

With time we confront a philosophical enigma, a psychological mystery, and a puzzle of logic. Not surprisingly, considering the massive reification involved, some have doubted its existence since humanity began distinguishing "time itself" from visible and tangible changes in the world. As Michael Ende (1984) put it: "There is in the world a great and yet ordinary secret. All of us are part of it, everyone is aware of it, but very few ever think of it. Most of us just accept it and never wonder over it. This secret is time."

Just what is "time"? Spengler declared that no one should be allowed to ask. The physicist Richard Feynman (1988) answered, "Don't even ask me. It's just too hard to think about." Empirically as much as in theory, the laboratory is powerless to reveal the flow of time, since no instrument exists that can register its passage. But why do we have such a strong sense that time does pass, ineluctably and in one particular direction, if it really doesn't? Why does this "illusion" have such a hold over us? We might just as well ask why alienation has such a hold over us. The passage of time is intimately familiar, the concept of time mockingly elusive; why should this appear bizarre, in a world whose survival depends on the mystification of its most basic categories?

We have gone along with the substantiation of time so that it seems a fact of nature, a power existing in its own right. The growth of a sense of time—the acceptance of time—is a process of adaptation to an ever more reified world. It is a constructed dimension, the most elemental aspect of culture. Time's inexorable nature provides the ultimate model of domination.

The further we go in time the worse it gets. We inhabit an age of the disintegration of experience, according to Adorno. The pressure of time, like that of its essential progenitor, division of labor, fragments and disperses all before it. Uniformity, equivalence, separation are byproducts of time's harsh force. The intrinsic beauty and meaning of that fragment of the world that is not-yet-culture moves steadily toward annihilation under a single cultures-wide clock. Paul Ricoeur's assertion (1985) that "we are not capable of producing a concept of time that is at once cosmological, biological, historical and individual," fails to notice how they are converging.

Concerning this "fiction" that upholds and accompanies all the forms of imprisonment, "the world is filled with propaganda alleging its existence," as Bernard Aaronson (1972) put it so well. "All awareness," wrote the poet Denise Levertov (1974), "is an awareness of time," showing just

how deeply alienated we are in time. We have become regimented under its empire, as time and alienation continue to deepen their intrusion, their debasement of everyday life. “Does this mean,” as David Carr (1988) asks, “that the ‘struggle’ of existence is to overcome time itself?” It may be that exactly this is the last enemy to be overcome.

In coming to grips with this ubiquitous yet phantom adversary, it is somewhat easier to say what time is not. It is not synonymous, for fairly obvious reasons, with change. Nor is it sequence, or order of succession. Pavlov’s dog, for instance, must have learned that the sound of the bell was followed by feeding; how else could it have been conditioned to salivate at that sound? But dogs do not possess time consciousness, so before and after cannot be said to constitute time.

Somewhat related are inadequate attempts to account for our all but inescapable sense of time. The neurologist Gooddy (1988), rather along the lines of Kant, describes it as one of our “subconscious assumptions about the world.” Some have described it, no more helpfully, as a product of the imagination, and the philosopher J.J.C. Smart (1980) decided that it is a feeling that “arises out of metaphysical confusion.” McTaggart (1908), F.H. Bradley (1930), and Dummett (1978) have been among 20th century thinkers who have decided against the existence of time because of its logically contradictory features, but it seems fairly plain that the presence of time has far deeper causes than mere mental confusion.

There is nothing even remotely similar to time. It is as unnatural and yet as universal as alienation. Chacalos (1988) points out that the present is a notion just as puzzling and intractable as time itself. What is the present? We know that it is always now; one is confined to it, in an important sense, and can experience no other “part” of time. We speak confidently of other parts, however, which we call “past” and “future.” But whereas things that exist in space elsewhere than here continue to exist, things that don’t exist now, as Sklar (1992) observes, don’t really exist at all.

Time necessarily flows; without its passage there would be no sense of time. Whatever flows, though, flows with respect to time. Time therefore flows with respect to itself, which is meaningless owing to the fact that nothing can flow with respect to itself. No vocabulary is available for the abstract explication of time apart from a vocabulary in which time is already presupposed. What is necessary is to put all the givens into question. Metaphysics, with a narrowness that division of labor has imposed from its inception, is too narrow for such a task.

What causes time to flow, what is it that moves it toward the future? Whatever it is, it must be beyond our time, deeper and more powerful. It must depend as Conly (1975) had it, “upon elemental forces which are continually in operation.”

William Spanos (1987) has noted that certain Latin words for culture not only signify agriculture or domestication, but are translations from Greek terms for the spatial image of time. We are, at base, “time-binders”, in Alfred Korzybski’s lexicon (1948); the species, due to this characteristic, creates a symbolic class of life, an artificial world. Time-binding reveals itself in an “enormous increase in the control over nature.” Time becomes real because it has consequences, and this efficacy has never been more painfully apparent.

Life, in its barest outline, is said to be a journey through time; that it is a journey through alienation is the most public of secrets. “No clock strikes for the happy one,” says a German proverb. Passing time, once meaningless, is now the inescapable beat, restricting and coercing us, mirroring blind authority itself. Guyau (1890) determined the flow of time to be “the distinction between what one needs and what one has,” and therefore “the incipience of regret.” Carpe diem, the maxim counsels, but civilization forces us always to mortgage the present to the future.

Time aims continually toward greater strictness of regularity and universality. Capital's technological world charts its progress by this, could not exist in its absence. "The importance of time," wrote Bertrand Russell (1929), lies "rather in relation to our desires than in relation to truth." There is a longing that is as palpable as time has become. The denial of desire can be gauged no more definitively than via the vast construct we call time.

Time, like technology, is never neutral; it is, as Castoriadis (1991) rightly judged, "always endowed with meaning." Everything that commentators like Ellul have said about technology, in fact, applies to time, and more deeply. Both conditions are pervasive, omnipresent, basic, and in general as taken for granted as alienation itself. Time, like technology, is not only a determining fact but also the enveloping element in which divided society develops. Similarly, it demands that its subjects be painstaking, "realistic", serious, and above all, devoted to work. It is autonomous in its overall aspect, like technology; it goes on forever of its own accord.

But like division of labor, which stands behind and sets in motion time and technology, it is, after all, a socially learned phenomenon. Humans, and the rest of the world, are synchronized to time and its technical embodiment, rather than the reverse. Central to this dimension—as it is to alienation per se—is the feeling of being a helpless spectator. Every rebel, it follows, also rebels against time and its relentlessness. Redemption must involve, in a very fundamental sense, redemption from time.

Time and the Symbolic World

"Time is the accident of accidents," according to Epicurus. Upon closer examination, however, its genesis appears less mysterious. It has occurred to many, in fact, that notions such as "the past," "the present," and "the future" are more linguistic than actual or physical. The neo-Freudian theorist Lacan, for example, decided that the time experience is essentially an effect of language. A person with no language would likely have no sense of the passage of time. R.A. Wilson (1980), moving much closer to the point, suggested that language was initiated by the need to express symbolic time. Gosseth (1972) argued that the system of tenses found in Indo-European languages developed along with consciousness of a universal or abstract time. Time and language are coterminous, decided Derrida (1982): "to be in the one is to be in the other." Time is a symbolic construct immediately prior, relatively speaking, to all the others and which requires language for its actualization.

Paul Valéry (1962) referred to the fall of the species into time as signalling alienation from nature; "by a sort of abuse, man creates time," he wrote. In the timeless epoch before this fall, which constituted the overwhelming majority of our existence as humans, life, as has often been said, had a rhythm but not a progression. It was the state when the soul could "gather in the whole of its being," in Rousseau's words, in the absence of temporal strictures, "where time is nothing to the soul." Activities themselves, usually of a leisurely character, were the points of reference before time and civilization; nature provided the necessary signals, quite independent of "time". Humanity must have been conscious of memories and purposes long before any explicit distinctions were drawn among past, present, and future (Fraser, 1988). Furthermore, as the linguist Whorf (1956) estimated, "preliterate ['primitive'] communities, far from being subrational, may show the human mind functioning on a higher and more complex plane of rationality than among civilized men."

The largely hidden key to the symbolic world is time; indeed it is at the origin of human symbolic activity. Time thus occasions the first alienation, the route away from aboriginal richness and wholeness. “Out of the simultaneity of experience, the event of Language,” says Charles Simic (1971), “is an emergence into linear time.” Researchers such as Zohar (1982) consider faculties of telepathy and precognition to have been sacrificed for the sake of evolution into symbolic life. If this sounds far-fetched, the sober positivist Freud (1932) viewed telepathy as quite possibly “the original archaic means through which individuals understand one another.” If the perception and apperception of time relate to the very essence of cultural life (Gurevich 1976), the advent of this time sense and its concomitant culture represent an impoverishment, even a disfigurement, by time.

The consequences of this intrusion of time, via language, indicate that the latter is no more innocent, neutral, or assumption-free than the former. Time is not only, as Kant said, at the foundation of all our representations, but, by this fact, also at the foundation of our adaptation to a qualitatively reduced, symbolic world. Our experience in this world is under an all-pervasive pressure to be representation, to be almost unconsciously degraded into symbols and measurements. “Time”, wrote the German mystic Meister Eckhart, “is what keeps the light from reaching us.”

Time awareness is what empowers us to deal with our environment symbolically; there is no time apart from this estrangement. It is by means of progressive symbolization that time becomes naturalized, becomes a given, is removed from the sphere of conscious cultural production. “Time becomes human in the measure to which it becomes actualized in narrative,” is another way of putting it (Ricoeur 1984). The symbolic accretions in this process constitute a steady throttling of instinctive desire; repression develops the sense of time unfolding. Immediacy gives way, replaced by the mediations that make history possible—language in the forefront.

One begins to see past such banalities as “time is an incomprehensible quality of the given world” (Sebba 1991). Number, art, religion make their appearances in this “given” world, disembodied phenomena of reified life. These emerging rites, in turn, Gurevitch (1964) surmises, lead to “the production of new symbolic contents, thus encouraging time leaping forward.” Symbols, including time, of course, now have lives of their own, in this cumulative, interacting progression. David Braine’s *The Reality of Time and the Existence of God* (1988) is illustrative. It argues that it is precisely time’s reality which proves the existence of God; civilization’s perfect logic.

All ritual is an attempt, through symbolism, to return to the timeless state. Ritual is a gesture of abstraction from that state, however, a false step that only leads further away. The “timelessness” of number is part of this trajectory, and contributes much to time as a fixed concept. In fact, Blumenberg (1983) seems largely correct in assaying that “time is not measured as something that has been present all along; instead it is produced, for the first time, by measurement.” To express time we must, in some way, quantify it; number is therefore essential. Even where time has already appeared, a slowly more divided social existence works toward its progressive reification only by means of number. The sense of passing time is not keen among tribal peoples, for example, who do not mark it with calendars or clocks.

Time: an original meaning of the word in ancient Greek is division. Number, when added to time, makes the dividing or separating that much more potent. The non-civilized often have considered it “unlucky” to count living creatures, and generally resist adopting the practice (e.g. Dobrizhoffer 1822). The intuition for number was far from spontaneous and inevitable, but “already in early civilizations,” Schimmel (1992) reports, “one feels that numbers are a reality having

as it were a magnetic power field around them.” It is not surprising that among ancient cultures with the strongest emerging senses of time—Egyptian, Babylonian, Mayan—we see numbers associated with ritual figures and deities; indeed the Mayans and Babylonians both had number gods (Barrow 1992).

Much later the clock, with its face of numbers, encouraged society to abstract and quantify the experience of time still further. Every clock reading is a measurement that joins the clock watcher to the “flow of time.” And we absently delude ourselves that we know what time is because we know what time it is. If we did away with clocks, Shallis (1982) reminds us, objective time would also disappear. More fundamentally, if we did away with specialization and technology, alienation would be banished.

The mathematizing of nature was the basis for the birth of modern rationalism and science in the West. This had stemmed from demands for number and measurement in connection with similar teachings about time, in the service of mercantile capitalism. The continuity of number and time as a geometrical locus were fundamental to the Scientific Revolution, which projected Galileo’s dictum to measure all that is measurable and make measurable that which is not. Mathematically divisible time is necessary for the conquest of nature, and for even the rudiments of modern technology.

From this point on, number-based symbolic time became crushingly real, an abstract construction “removed from and even contrary to every internal and external human experience” (Syzamosi 1986). Under its pressure, money and language, merchandise and information have become steadily less distinguishable, and division of labor more extreme.

To symbolize is to express time consciousness, for the symbol embodies the structure of time (Darby 1982). Clearer still is Meerloo’s formulation: “To understand a symbol and its development is to grasp human history in a nutshell.” The contrast is the life of the non-civilized, lived in a capacious present that cannot be reduced to the single moment of the mathematical present. As the continual now gave way to increasing reliance upon systems of significant symbols (language, number, art, ritual, myth) dislodged from the now, the further abstraction, history, began to develop. Historical time is no more inherent in reality, no less an imposition on it, than the earlier, less choate forms of time.

In a slowly more synthetic context, astronomical observation is invested with new meanings. Once pursued for its own sake, it comes to provide the vehicle for scheduling rituals and coordinating the activities of complex society. With the help of the stars, the year and its divisions exist as instruments of organizational authority (Leach 1954). The formation of a calendar is basic to the formation of a civilization. The calendar was the first symbolic artifact that regulated social behavior by keeping track of time. And what is involved is not the control of time but its opposite: enclosure by time in a world of very real alienation. One recalls that our word comes from the Latin *calends*, the first day of the month, when business accounts had to be settled.

Time to Pray, Time to Work

“No time is entirely present,” said the Stoic Chrysippus, and meanwhile the concept of time was being further advanced by the underlying Judeo-Christian tenet of a linear, irreversible path between creation and salvation. This essentially historical view of time is the very core of Christianity; all the basic notions of measurable, one-way time can be found in St. Augustine’s (fifth

century) writings. With the spread of the new religion the strict regulation of time, on a practical plane, was needed to help maintain the discipline of monastic life. Bells summoning the monks to prayer eight times daily were heard far beyond the confines of the cloister, and thus a measure of time regulation was imposed on society at large. The population continued to exhibit “une vaste indifférence au temps” throughout the feudal era, according to Marc Bloch (1940), but it is no accident that the first public clocks adorned cathedrals in the West. Worth noting in this regard is the fact that the calling of precise prayer times became the chief externalization of medieval Islamic belief.

The invention of the mechanical clock was one of the most important turning points in the history of science and technology; indeed of all human art and culture (Syne 1959). The improvement in accuracy presented authority with enhanced opportunities for oppression. An early devotee of elaborate mechanical clocks, for example, was Duke Gian Galeazzo Visconti, described in 1381 as “a sedate but crafty ruler with a great love of order and precision” (Fraser 1988). As Weizenbaum (1976) wrote, the clock began to create “literally a new reality...that was and remains an impoverished version of the old one.”

A qualitative change was introduced. Even when nothing was happening, time did not cease to flow. Events, from this era on, are put into this homogeneous, objectively measured, moving envelope—and this unilinear progression incited resistance. The most extreme were the chiliast, or millenarian, movements, which appeared in various parts of Europe from the 14th into the 17th centuries. These generally took the form of peasant risings which aimed at recreating the primal egalitarian state of nature and were explicitly opposed to historical time. These utopian explosions were quelled, but remnants of earlier time concepts persisted as a “lower” stratum of folk consciousness in many areas.

During the Renaissance, domination by time reached a new level as public clocks now tolled all twenty-four hours of the day and added new hands to mark the passing seconds. A keen sense of time’s all-consuming presence is the great discovery of the age, and nothing portrays this more graphically than the figure of Father Time. Renaissance art fused the Greek god Kronos with the Roman god Saturn to form the familiar grim deity representing the power of Time, armed with a fatal scythe signifying his association with agriculture/domestication. The Dance of Death and other medieval memento mori artifacts preceded Father Time, but the subject is now time rather than death.

The seventeenth century was the first in which people thought of themselves as inhabiting a particular century. One now needed to take one’s bearings within time. Francis Bacon’s *The Masculine Birth of Time* (1603) and *A Discourse Concerning a New Planet* (1605) embraced the deepening dimension and revealed how a heightened sense of time could serve the new scientific spirit. “To choose time is to save time,” he wrote, and “Truth is the daughter of time.” Descartes followed, introducing the idea of time as limitless. He was one of the first advocates of the modern idea of progress, closely related to that of unbounded linear time, and characteristically expressing itself in his famous invitation that we become “masters and possessors of nature.”

Newton’s clockwork universe was the crowning achievement of the Scientific Revolution in the seventeenth century, and was grounded in his conception of “Absolute, true and mathematical time, of itself and from its own nature, flowing equably without relation to anything eternal.” Time is now the grand ruler, answering to no one, influenced by nothing, completely independent of the environment: the model of unassailable authority and perfect guarantor of unchanging

alienation. Classical Newtonian physics in fact remains, despite changes in science, the dominant, everyday conception of time.

The appearance of independent, abstract time found its parallel in the emergence of a growing, formally free working class forced to sell its labor power as an abstract commodity on the market. Prior to the coming of the factory system but already subject to time's disciplinary power, this labor force was the inverse of the monarch Time: free and independent in name only. In Foucault's judgment (1973), the West had become a "carceral society" from this point on. Perhaps more directly to the point is the Balkan proverb, "A clock is a lock."

In 1749 Rousseau threw away his watch, a symbolic rejection of modern science and civilization. Somewhat more in the dominant spirit of the age, however, were the gifts of fifty-one watches to Marie Antoinette upon her engagement. The word is certainly appropriate, as people had to "watch" the time more and more; watches would soon become one of the first consumer durables of the industrial era.

William Blake and Goethe both attacked Newton, the symbol of the new time and science, for his distancing of life from the sensual, his reduction of the natural to the measurable. Capitalist ideologue Adam Smith, on the other hand, echoed and extended Newton, by calling for greater rationalization and routinization. Smith, like Newton, labored under the spell of an increasingly powerful and remorseless time in promoting further division of labor as objective and absolute progress.

The Puritans had proclaimed waste of time the first and in principle the deadliest of sins (Weber 1921); this became, about a century later, Ben Franklin's "Time is money." The factory system was initiated by clockmakers and the clock was the symbol and fountainhead of the order, discipline and repression required to create an industrial proletariat.

Hegel's grand system in the early 19th century heralded the "push into time" that is History's momentum; time is our "destiny and necessity," he declared. Postone (1993) noted that the "progress" of abstract time is closely tied to the "progress" of capitalism as a way of life. Waves of industrialism drowned the resistance of the Luddites; appraising this general period, Lyotard (1988) decided that "the illness of time was now incurable."

An increasingly complex class society requires an ever larger array of time signals. Fights against time, as Thompson (1967) and Hohn (1984) have pointed out, gave way to struggles over time; resistance to being yoked to time and its inherent demands was defeated in general, replaced, typically, by disputes over the fair determination of time schedules or the length of the work day. (In an address to the First International (July 28, 1868), Karl Marx advocated, by the way, age nine as the time to begin work.)

The clock descended from the cathedral, to court and courthouse, next to the bank and railway station, and finally to the wrist and pocket of each decent citizen. Time had to become more "democratic" in order to truly colonize subjectivity. The subjection of outer nature, as Adorno and others have understood, is successful only in the measure of the conquest of inner nature. The unleashing of the forces of production, to put it another way, depended on time's victory in its long-waged war on freer consciousness. Industrialism brought with it a more complete commodification of time, time in its most predatory form yet. It was this that Giddens (1981) saw as "the key to the deepest transformations of day-to-day social life that are brought about by the emergence of capitalism."

"Time marches on," as the saying goes, in a world increasingly dependent on time and a time increasingly unified. A single giant clock hangs over the world and dominates. It pervades all;

in its court there is no appeal. The standardization of world time marks a victory for the efficient/machine society, a universalism that undoes particularity as surely as computers lead to homogenization of thought.

Paul Virilio (1986) has gone so far as to foresee that “the loss of material space leads to the government of nothing but time.” A further provocative notion posits a reversal of the birth of history out of maturing time. Virilio (1991), in fact, finds us already living within a system of technological temporality where history has been eclipsed. “...the primary question becomes less one of relations to history than one of relations to time.”

Such theoretical flights aside, however, there is ample evidence and testimony as to time’s central role in society. In “Time — The Next Source of Competitive Advantage” (July-August, 1988 *Harvard Business Review*), George Stark, Jr. discusses it as pivotal in the positioning of capital: “As a strategic weapon, time is the equivalent of money, productivity, quality, even innovation.” Time management is certainly not confined to the corporations; Levine’s 1985 study of publicly accessible clocks in six countries demonstrated that their accuracy was an exact gauge of the relative industrialization of national life. Paul Adler’s January-February, 1993 *Harvard Business Review* offering, “Time-and-Motion Regained,” nakedly champions the neo-Taylorist standardization and regimentation of work: behind the well-publicized “workplace democracy” window dressing in some factories remains the “time-and-motion discipline and formal bureaucratic structures essential for efficiency and quality in routine operations.”

Time in Literature

It is clear that the advent of writing facilitated the fixation of time concepts and the beginning of history. But as the anthropologist Goody (1991) points out, “oral cultures are often only too prepared to accept these innovations.” They have already been conditioned, after all, by language itself. McLuhan (1962) discussed how the coming of the printed book, and mass literacy, reinforced the logic of linear time.

Life was steadily forced to adapt. “For now hath time made me his numbering clock,” wrote Shakespeare in *Richard II*. “Time”, like “rich”, was one of the favorite words of the Bard, a time-haunted figure. A hundred years later, Defoe’s *Robinson Crusoe* reflected how little escape from time seemed possible. Marooned on a desert island, Crusoe is deeply concerned with the passage of time; keeping close track of his affairs, even in such a setting, meant above all keeping track of the time, especially as long as his pen and ink lasted.

Northrop Frye (1950) saw the “alliance of time and Western man” as the defining characteristic of the novel. Ian Watt’s *The Rise of the Novel* (1957) likewise focused on the new concern with time that stimulated the novel’s emergence in the eighteenth century. As Jonathan Swift told it in *Gulliver’s Travels* (1726), his protagonist never did anything without looking at his watch. “He called it his oracle, and said it pointed out the time for every action of his life.” The Lilliputians concluded that the watch was Gulliver’s god. Sterne’s *Tristram Shandy* (1760), on the eve of the Industrial Revolution, begins with the mother of Tristram interrupting his father at the moment of their monthly coitus: “‘Pray, my dear,’ quoth my mother, ‘have you not forgot to wind up the clock?’”

In the nineteenth century Poe satirized the authority of clocks, linking them to bourgeois superficiality and obsession with order. Time is the real subject of Flaubert’s novels, according to

Hauser (1956), as Walter Pater (1901) sought in literature the “wholly concrete moment” which would “absorb past and future in an intense consciousness of the present,” similar to Joyce’s celebration of “epiphanies”. In *Marius the Epicurean* (1909), Pater depicts Marius suddenly realizing “the possibility of a real world beyond time.” Meanwhile Swinburne looked for a respite beyond “time-stricken lands” and Baudelaire declared his fear and hatred of chronological time, the devouring foe.

The disorientation of an age wracked by time and subject to the acceleration of history has led modern writers to deal with time from new and extreme points of view. Proust delineated interrelationships among events that transcended conventional temporal order and thus violated Newtonian conceptions of causation. His thirteen-volume *A la Recherche du Temps Perdu* (1925), usually rendered in English as *Remembrance of Things Past*, is more literally and accurately translated as *Searching for Lost Time*. In it he judges that “a minute freed from the order of time has recreated in us...the individual freed from the order of time,” and recognizes “the only environment in which one could live and enjoy the essence of things, that is to say, entirely outside time.”

Philosophy in the twentieth century has been largely preoccupied with time. Consider the misguided attempts to locate authentic time by thinkers as different as Bergson and Heidegger, or the latter’s virtual deification of time. A.A. Mendilow’s *Time and the Novel* (1952) reveals how the same intense interest has dominated the novels of the century, in particular those of Joyce, Woolf, Conrad, James, Gide, Mann, and of course, Proust. Other studies, such as Church’s *Time and Reality* (1962), have expanded this list of novelists to include, among others, Kafka, Sartre, Faulkner, and Vonnegut.

And of course time-struck literature cannot be confined to the novel. T.S. Eliot’s poetry often expressed a yearning to escape time-bound, time-ridden conventionality. “Burnt Norton” (1941) is a good example, with these lines:

Time past and time future
Allow but a little consciousness.
To be conscious is not to be in time.

Samuel Beckett, early in his career (1931), wrote pointedly of “the poisonous ingenuity of Time in the science of affliction.” The play *Waiting for Godot* (1955) is an obvious candidate in this regard, and so is his *Murphy* (1957), in which time becomes reversible in the mind of the main character. When the clock may go either way, our sense of time, and time itself, vanishes.

The Psychology of Time

Turning to what is commonly called psychology, we again come upon one of the most fundamental questions: Is there really a phenomenon of time that exists apart from any individual, or does it reside only in one’s perceptions of it? Husserl, for example, failed to show why consciousness in the modern world seems to inevitably constitute itself in time. We know that experiences, like events of every other kind, are neither past, present nor future in themselves.

Whereas there was little sociological interest in time until the 1970s, the number of studies of time in the literature of psychology has increased rapidly since 1930 (Lauer 1988). Time is perhaps

hardest of all to define “psychologically”. What is time? What is the experience of time? What is alienation? What is the experience of alienation? If the latter subject were not so neglected the obvious interrelationship would be made clear.

Davies (1977) termed time’s passage “a psychological phenomenon of mysterious origin” and concluded (1983), “the secret of mind will only be solved when we understand the secret of time.” Given the artificial separation of the individual from society, which defines their field, it is inevitable that such psychologists and psychoanalysts as Eissler (1955), Loewald (1962), Namnum (1972), and Morris (1983) have encountered “great difficulties” in studying time!

At least a few partial insights have been achieved, however. Hartcollis (1983), for instance, noted that time is not only an abstraction but a feeling, while Korzybski (1948) had already taken this further with his observation that “‘time’ is a feeling, produced by conditions of this world...” In all our lives we are “waiting for Godot,” according to Arlow (1986), who believed that our experience of time arises out of unfulfilled emotional needs. Similarly, Reichenbach (1956) had termed anti-time philosophies, like religion, “documents of emotional dissatisfaction.” In Freudian terms, Bergler and Roheim (1946) saw the passage of time as symbolizing separation periods originating in early infancy. “The calendar is an ultimate materialization of separation anxiety.” If informed by a critical interest in the social and historical context, the implications of these undeveloped points could become serious contributions. Confined to psychology, however, they remain limited and even misleading.

In the world of alienation no adult can contrive or decree the freedom from time that the child habitually enjoys—and must be made to lose. Time training, the essence of schooling, is vitally important to society. This training, as Fraser (1984) very cogently puts it, “bears in almost paradigmatic form the features of a civilizing process.” A patient of Joost Meerlo (1966) “expressed it sarcastically: ‘Time is civilization,’ by which she meant that scheduling and meticulousness were the great weapons used by adults to force the youngsters into submission and servility.” Piaget’s studies (1946, 1952) could detect no innate sense of time. Rather, the abstract notion of “time” is of considerable difficulty to the young. It is not something they learn automatically; there is no spontaneous orientation toward time (Hermelin and O’Connor 1971, Voyat 1977).

Time and tidy are related etymologically, and our Newtonian idea of time represents perfect and universal ordering. The cumulative weight of this ever more pervasive pressure shows up in the increasing number of patients with time anxiety symptoms (Lawson 1990). Dooley (1941) referred to “the observed fact that people who are obsessive in character, whatever their type of neurosis, are those who make most extensive use of the sense of time...” Pettit’s “Anality and Time” (1969) argued convincingly for the close connection between the two, as Meerloo (1966), citing the character and achievements of Mussolini and Eichmann, found “a definite connection between time compulsion and fascistic aggression.”

Capek (1961) called time “a huge and chronic hallucination of the human mind”; there are few experiences indeed that can be said to be timeless. Orgasm, LSD, a life “flashing before one’s eyes” in a moment of extreme danger...these are some of the rare, evanescent situations intense enough to escape from time’s insistence.

Timelessness is the ideal of pleasure, wrote Marcuse (1955). The passage of time, on the other hand, fosters the forgetting of what was and what can be. It is the enemy of eros and deep ally of the order of repression. The mental processes of the unconscious are in fact timeless, decided Freud (1920). “...time does not change them in any way and the idea of time cannot be applied to

them.” Thus desire is already outside of time. As Freud said in 1932: “There is nothing in the Id that corresponds to the notion of time; there is no recognition of the passage of time.”

Marie Bonaparte (1939) argued that time becomes ever more plastic and obedient to the pleasure principle insofar as we loosen the bonds of full ego control. Dreams are a form of thinking among non-civilized peoples (Kracke 1987); this faculty must have once been much more accessible to us. The Surrealists believed that reality could be much more fully understood if we could make the connection to our instinctive, subconscious experiences; Breton (1924), for example, proclaimed the radical goal of a resolution of dream and conscious reality.

When we dream the sense of time is virtually nonexistent, replaced by a sensation of presentness. It should come as no surprise that dreams, which ignore the rules of time, would attract the notice of those searching for liberatory clues, or that the unconscious, with its “storms of impulse” (Stern 1977), frightens those with a stake in the neurosis we call civilization. Norman O. Brown (1959) saw the sense of time or history as a function of repression; if repression were abolished, he reasoned, we would be released from time. Similarly, Coleridge (1801) recognized in the man of “methodical industry” the origin and creator of time.

In his *Critique of Cynical Reason* (1987), Peter Sloterdijk called for the “radical recognition of the Id without reservation,” a narcissistic self-affirmation that would laugh in the face of morose society. Narcissism has of course traditionally been cast as wicked, the “heresy of self-love.” In reality that meant it was reserved for the ruling classes, while all others (workers, women, slaves) had to practice submission and self-effacement (Fine 1986). The narcissist symptoms are feelings of emptiness, unreality, alienation, life as no more than a succession of moments, accompanied by a longing for powerful autonomy and self-esteem (Alford 1988, Grunberger 1979). Given the appropriateness of these “symptoms” and desires it is little wonder that narcissism can be seen as a potentially emancipatory force (Zweig 1980). Its demand for total satisfaction is obviously a subversive individualism, at a minimum.

The narcissist “hates time, denies time” (letter to author, Alford 1993) and this, as always, provokes a severe reaction from the defenders of time and authority. Psychiatrist E. Mark Stern (1977), for instance: “Since time begins beyond one’s control one must correspond to its demands... Courage is the antithesis of narcissism.” This condition, which certainly may include negative aspects, contains the germ of a different reality principle, aiming at the non-time of perfection wherein being and becoming are one and including, implicitly, a halt to time.

Time in Science

I’m not a scientist but I do know that all things begin and end in eternity.

The Man Who Fell to Earth, Walter Tevis

Science, for our purposes, does not comment on time and estrangement with anywhere near the directness of, say, psychology. But science can be re-construed to shed light on the topic at hand, because of the many parallels between scientific theory and human affairs.

“Time,” decided N.A. Kozyrev (1971), “is the most important and the most mysterious phenomenon of Nature. Its notion is beyond the grasp of imagination.” Some scientists, in fact, have felt (e.g. Dingle 1966) that “all the real problems associated with the notion of time are independent of physics.” Science, and physics in particular, may indeed not have the last word; it is another source of commentary, however, though itself alienated and generally indirect.

Is “physical time” the same as the time of which we are conscious; if not, how does it differ? In physics, time seems to be an undefined basic dimension, as much a taken-for-granted given as it is outside the realm of science. This is one way to remind ourselves that, as with every other kind of thinking, scientific ideas are meaningless outside their cultural context. They are symptoms of and symbol for the ways of living that give rise to them. According to Nietzsche, all writing is inherently metaphorical, even though science is rarely looked at this way. Science has developed by drawing an increasingly sharp separation between inner and outer worlds, between dream and “reality”. This has been accomplished by the mathematization of nature, which has largely meant that the scientist proceeds by a method that debarbs him or her from the larger context, including the origins and significance of his/her projects. Nonetheless, as H.P. Robinson (1964) stated, “the cosmologies which humanity has set up at various times and in various localities inevitably reflect the physical and intellectual environment, including above all the interests and culture of each society.”

Subjective time, as P.C.W. Davies pointed out (1981), “possesses apparent qualities that are absent from the ‘outside’ world and which are fundamental to our conception of reality”—principally the “passing” of time. Our sense of separation from the world owes largely to this discrepancy. We exist in time (and alienation), but time is not found in the physical world. The time variable, though useful to science, is a theoretical construct. “The laws of science,” Stephen Hawking (1988) explained, “do not distinguish between past and future.” Einstein had gone further than this some thirty years earlier; in one of his last letters, he wrote that “People like us, who believe in physics, know that the distinction between past, present and future is only a stubborn, persistent illusion.” But science partakes of society in other ways concerning time, and very deeply. The more “rational” it becomes, the more variations in time are suppressed. Theoretical physics geometrizes time by conceiving it as a straight line, for example. Science does not stand apart from the cultural history of time.

As implied above, however, physics does not contain the idea of a present instant of time that passes (Park 1972). Furthermore, the fundamental laws are not only completely reversible as to the ‘arrow of time’—as Hawking noted—but “irreversible phenomena appear as the result of the particular nature of our human cognition,” according to Watanabe (1953). Once again we find human experience playing a decisive role, even in this most “objective” realm. Zee (1992) put it this way: “Time is that one concept in physics we can’t talk about without dragging in, at some level, consciousness.”

Even in seemingly straightforward areas ambiguities exist where time is concerned. While the complexity of the most complex species may increase, for example, not all species become more complex, prompting J.M. Smith (1972) to conclude that it is “difficult to say whether evolution as a whole has a direction.”

In terms of the cosmos, it is argued, “time’s arrow” is automatically indicated by the fact that the galaxies are receding away from each other. But there seems to be virtual unanimity that as far as the basics of physics are concerned, the “flow” of time is irrelevant and makes no sense; fundamental physical laws are completely neutral with regard to the direction of time (Mehlberg 1961, 1971, Landsberg 1982, Squires 1986, Watanabe 1953, 1956, Swinburne 1986, Morris 1984, Mallove 1987, D’Espagnant 1989, etc.). Modern physics even provides scenarios in which time ceases to exist and, in reverse, comes into existence. So why is our world asymmetric in time? Why can’t it go backward as well as forward? This is a paradox, inasmuch as the individual

molecular dynamics are all reversible. The main point, to which I will return later, is that time's arrow reveals itself as complexity develops, in striking parallel with the social world.

The flow of time manifests itself in the context of future and past, and they in turn depend on a referent known as the now. With Einstein and relativity, it is clear that there is no universal present: we cannot say it is "now" throughout the universe. There is no fixed interval at all that is independent of the system to which it refers, just as alienation is dependent on its context.

Time is thus robbed of the autonomy and objectivity it enjoyed in the Newtonian world. It is definitely more individually delineated, in Einstein's revelations, than the absolute and universal monarch it had been. Time is relative to specific conditions and varies according to such factors as speed and gravitation. But if time has become more "decentralized", it has also colonized subjectivity more than ever before. As time and alienation have become the rule throughout the world, there is little solace in knowing that they are dependent on varying circumstances. The relief comes in acting on this understanding; it is the invariance of alienation that causes the Newtonian model of independently flowing time to hold sway within us, long after its theoretical foundations were eliminated by relativity.

Quantum theory, dealing with the smallest parts of the universe, is known as the fundamental theory of matter. The core of quantum theory follows other fundamental physical theories, like relativity, in making no distinction in the direction of time (Coveny and Highfield 1990). A basic premise is indeterminism, in which the movement of particles at this level is a matter of probabilities. Along with such elements as positrons, which can be regarded as electrons moving backward in time, and tachyons, faster-than-light particles that generate effects and contexts reversing the temporal order (Gribbin 1979, Lindley 1993), quantum physics has raised fundamental questions about time and causality. In the quantum microworld common acausal relationships have been discovered that transcend time and put into question the very notion of the ordering of events in time. There can be "connections and correlations between very distant events in the absence of any intermediary force or signal" which occur instantaneously (Zohar 1982, Aspect 1982). The eminent American physicist John Wheeler has called attention (1977, 1980, 1986) to phenomena in which action taken now affects the course of events that have already happened.

Gleick (1992) summed up the situation as follows: "With simultaneity gone, sequentiality was foundering, causality was under pressure, and scientists generally felt themselves free to consider temporal possibilities that would have seemed far-fetched a generation before." At least one approach in quantum physics has attempted to remove the notion of time altogether (J.G. Taylor 1972); D. Park (1972), for instance, said, "I prefer the atemporal representation to the temporal one."

The bewildering situation in science finds its match in the extremity of the social world. Alienation, like time, produces ever greater oddities and pressures: the most fundamental questions finally, almost necessarily, emerge in both cases.

St. Augustine's fifth century complaint was that he didn't understand what the measurement of time really consisted of. Einstein, admitting the inadequacy of his comment, often defined time as "what a clock measures." Quantum physics, for its part, posits the inseparability of measurer and what is measured. Via a process physicists don't claim to understand fully, the act of observation or measurement not only reveals a particle's condition but actually determines it (Pagels 1983). This has prompted Wheeler (1984) to ask, "Is everything—including time—built from nothingness by acts of observer-participancy?" Again a striking parallel, for alienation, at every level and from its origin, requires exactly such participation, virtually as a matter of definition.

Time's arrow—irrevocable, one-direction-only time—is the monster that has proven itself more terrifying than any physical projectile. Directionless time is not time at all, and Cambel (1993) identifies time directionality as “a primary characteristic of complex systems.” The time-reversible behavior of atomic particles is “generally commuted into behavior of the system that is irreversible,” concluded Schlegel (1961). If not rooted in the micro world, where does time come from? Where does our time-bound world come from? It is here that we encounter a provocative analogy. The small scale world described by physics, with its mysterious change into the macro world of complex systems, is analogous to the “primitive” social world and the origins of division of labor, leading to complex, class-divided society with its apparently irreversible “progress”.

A generally held tenet of physical theory is that the arrow of time is dependent on the Second Law of Thermodynamics (e.g. Reichenbach 1956), which asserts that all systems tend toward ever greater disorder or entropy. The past is thus more orderly than the future. Some proponents of the Second Law (e.g. Boltzmann 1866) have found in entropic increase the very meaning of the past-future distinction.

This general principle of irreversibility was developed in the middle decades of the 19th century, beginning with Carnot in 1824, when industrial capitalism itself reached its apparent non-reversible point. If evolution was the century's optimistic application of irreversible time, the Second Law of Thermodynamics was its pessimistic one. In its original terms, it pictured a universe as an enormous heat engine running down, where work became increasingly subject to inefficiency and disorder. But nature, as Toda (1978) noticed, is not an engine, does not work, and is not concerned with “order” or “disorder”. The cultural aspect of this theory—namely, capital's fear for its future—is hard to miss.

One hundred and fifty years later, theoretical physicists realize that the Second Law and its supposed explanation of the arrow of time cannot be considered a solved problem (Neman 1982). Many supporters of reversible time in nature consider the Second Law too superficial, a secondary law not a primary one (e.g. Haken 1988, Penrose 1989). Others (e.g. Sklar 1985) find the very concept of entropy ill-defined and problematic, and, related to the charge of superficiality, it is argued that the phenomena described by the Second Law can be ascribed to particular initial conditions and do not represent the workings of a general principle (Davies 1981, Barrow 1991). Furthermore, not every pair of events that bear the “afterward” relation the one to the other bear an entropic difference. The science of complexity (with a wider scope than chaos theory) has discovered that not all systems tend toward disorder (Lewin 1992), also contrary to the Second Law. Moreover, isolated systems, in which no exchanges with the environment are allowed, display the Second Law's irreversible trend; even the universe may not be such a closed system. Sklar (1974) points out that we don't know whether the total entropy of the universe is increasing, decreasing, or remaining stationary.

Despite such aporias and objections, a movement toward an “irreversible physics” based on the Second Law is underway, with quite interesting implications. 1977 Nobel Laureate Ilya Prigogine seems to be the most tireless and public advocate of the view that there is an innate unidirectional time at all levels of existence. Whereas the fundamentals of every major scientific theory, as noted, are neutral with respect to time, Prigogine gives time a primary emphasis in the universe. Irreversibility is for him and his like-minded fellow believers an over-arching primal axiom. In supposedly nonpartisan science, the question of time has clearly become a political matter.

Prigogine (1985), in a symposium sponsored by Honda and promoting such projects as Artificial Intelligence: “Questions such as the origin of life, the origin of the universe, or the origin of

matter, can no longer be discussed without recourse to irreversibility.” It is no coincidence that non-scientist Alvin Toffler, America’s leading cheerleader for a high-tech world, provided an enthusiastic forward for one of the basic texts of the pro-time campaign, Prigogine and Stenger’s *Order Out of Chaos* (1984). Prigogine disciple Ervin Laszlo, in a bid to legitimate and extend the dogma of universally irreversible time, asks whether the laws of nature are applicable to the human world. He soon answers, in effect, his own disingenuous question (1985): “The general irreversibility of technological innovation overrides the indeterminacy of individual points of bifurcation and drives the processes of history in the observed direction from primitive tribes to modern techno-industrial states.” How “scientific”! This transposition from the “laws of nature” to the social world could hardly be improved on as a description of time, division of labor, and the mega-machine crushing the autonomy or “reversibility” of human decision. Leggett (1987) expressed this perfectly: “So it would seem that the arrow of time which appears in the apparently impersonal subject of thermodynamics is intimately related to what we, as human agents, can or cannot do.”

It is deliverance from “chaos” which Prigogine and others promise the ruling system, using the model of irreversible time. Capital has always reigned in fear of entropy or disorder. Resistance, especially resistance to work, is the real entropy, which time, history, and progress constantly seek to banish. Prigogine and Stenger (1984) wrote: “Irreversibility is either true on all levels or none.” All or nothing, always the ultimate stakes of the game.

Since civilization subjugated humanity we have had to live with the melancholy idea that our highest aspirations are perhaps impossible in a world of steadily mounting time. The more that pleasure and understanding are deferred, moved out of reach—and this is the essence of civilization—the more palpable is the dimension of time. Nostalgia for the past, fascination with the idea of time travel, and the heated quest for increased longevity are some of the symptoms of time sickness, and there seems to be no ready cure. “What does not elapse in time is the lapse of time itself,” as Merleau-Ponty (1945) realized.

In addition to the general antipathy at large, however, it is possible to point out some recent specifics of opposition. The Society for the Retardation of Time was established in 1990 and has a few hundred members in four European countries. Less whimsical than it may sound, its members are committed to reversing the contemporary acceleration of time in everyday life, toward the aim of being allowed to live more satisfying lives. Michael Theunissen’s *Negative Theology of Time* appeared in 1991, aimed explicitly at what it sees as the ultimate human enemy. This work has engendered a very lively debate in philosophical circles (Penta 1993), due to its demand for a negative reconsideration of time.

“Time is the one single movement appropriate to itself in all its parts,” wrote Merleau-Ponty (1962). Here we see the fullness of alienation in the separated world of capital. Time is thought of by us before its parts; it thus reveals the totality. The crisis of time is the crisis of the whole. Its triumph, apparently well established, was in fact never complete as long as anyone could question the first premises of its being.

Above Lake Silvaplana, Nietzsche found the inspiration for Thus Spake Zarathustra. “Six thousand feet above men and time...,” he wrote in his journal. But time cannot be transcended by means of a lofty contempt for humanity, because overcoming the alienation that it generates is not a solitary project. In this sense I prefer Rexroth’s (1968) formulation: “the only Absolute is the Community of Love with which Time ends.”

Can we put an end to time? Its movement can be seen as the master and measure of a social existence that has become increasingly empty and technicized. Averse to all that is spontaneous and immediate, time more and more clearly reveals its bond with alienation. The scope of our project of renewal must include the entire length of this joint domination. Divided life will be replaced by the possibility of living completely and wholly—timelessly—only when we erase the primary causes of that division.

We have gone along with the substantiation of time so that it seems a fact of nature, a power existing in its own right. The growth of a sense of time—the acceptance of time—is a process of adaptation to an ever more reified world. It is a constructed dimension, the most elemental aspect of culture. Time's inexorable nature provides the ultimate model of domination.

All ritual is an attempt, through symbolism, to return to the timeless state. Ritual is a gesture of abstraction from that state, however, a false step that only leads further away. The "timelessness" of number is part of this trajectory, and contributes much to time as a fixed concept.

With the help of the stars, the year and its divisions exist as instruments of organizational authority (Leach 1954). The formation of a calendar is basic to the formation of a civilization. The calendar was the first symbolic artifact that regulated social behavior by keeping track of time. And what is involved is not the control of time but its opposite: enclosure by time in a world of very real alienation.

In the world of alienation no adult can contrive or decree the freedom from time that the child habitually enjoys—and must be made to lose. Time training, the essence of schooling, is vitally important to society. This training, as Fraser (1984) very cogently puts it, "bears in almost paradigmatic form the features of a civilizing process."

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